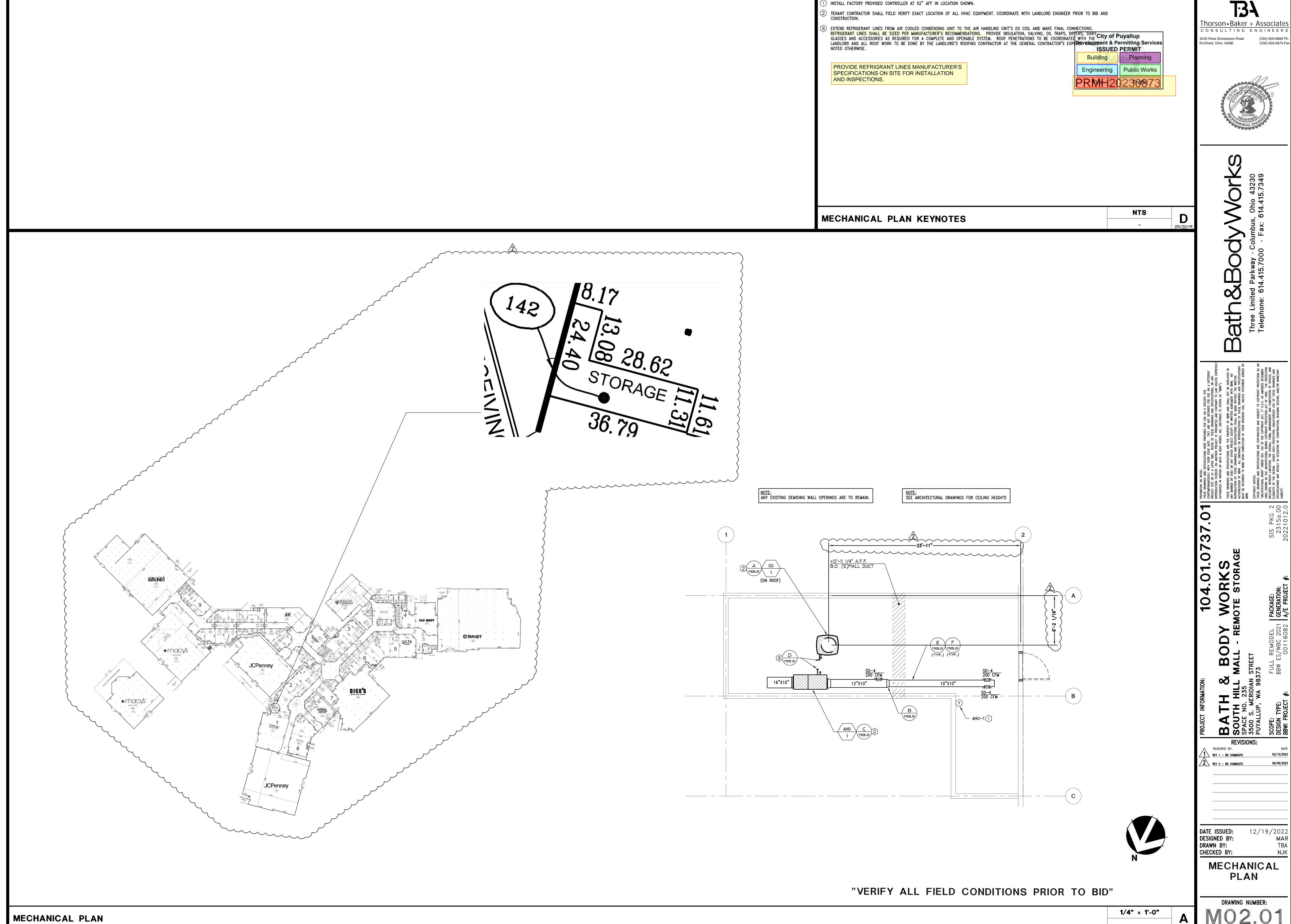
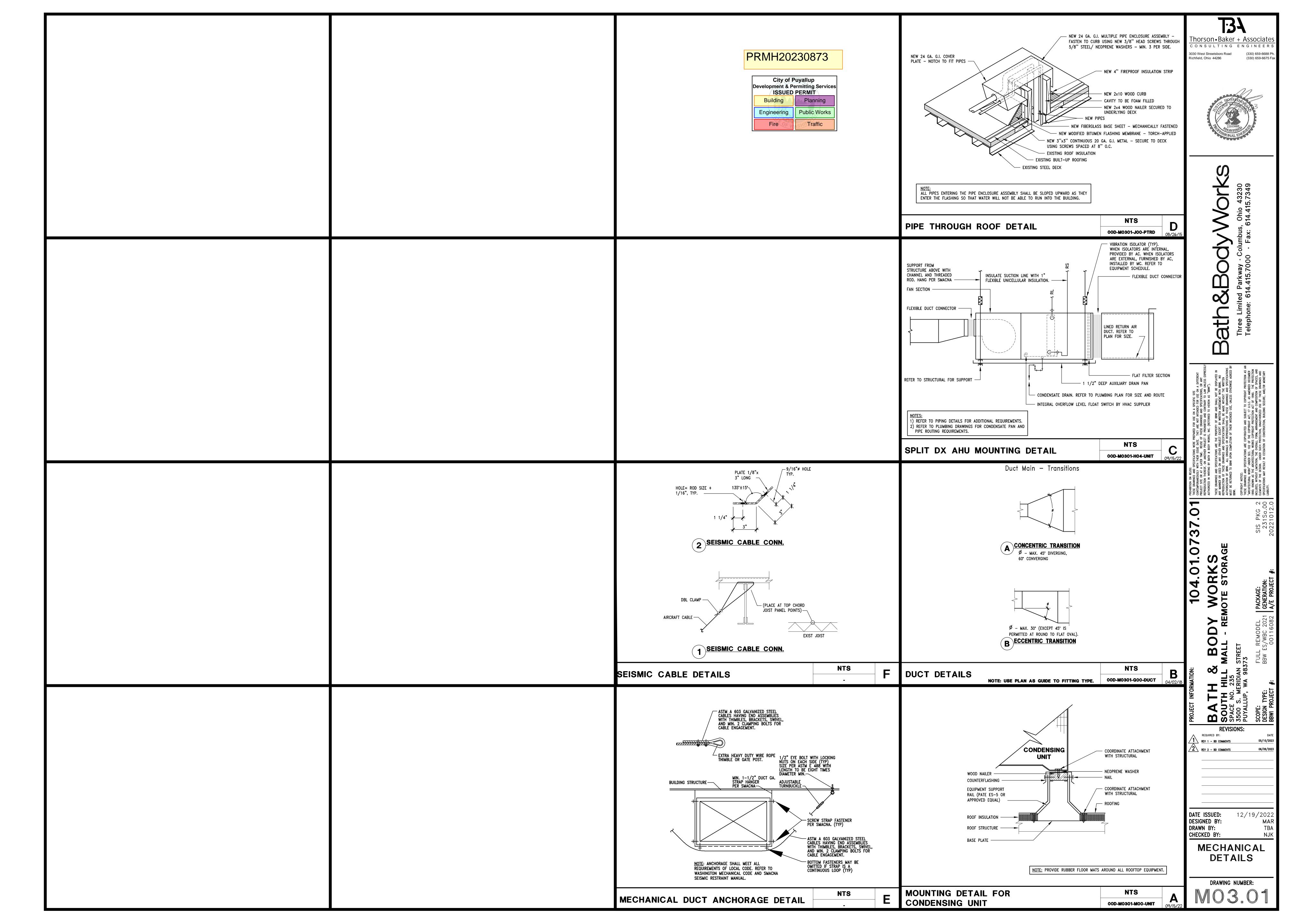


### PRMH20230873 **GENERAL NOTES** ALL NOTES INCLUDED HEREIN ARE MADE PART OF EACH AND ALL MECHANICAL, ELECTRICAL AND PLUMBING SECTIONS OF WORK. Thorson • Baker + Associate AIR HANDLING UNIT SCHEDULE (SPLIT DX) REFER TO LANDLORD'S SPECIFICATIONS AND TENANT DESIGN CRITERIA FOR NECESSARY INFORMATION AND COORDINATION WITH OTHER TRADES. CONSULTING ENGINEER City of Puyallup TEM6A0B24H2 THE ABBREVIATION BBWI WHEREVER IT APPEARS IN THE DRAWINGS, SHALL REFER TO "BATH & BODY WORKS, INC.". ANY REFERENCE TO TENANT, 3030 West Streetsboro Road Development & Permitting Services Richfield, Ohio 44286 (330) 659-6675 F AIR FLOW (CFM) BRAND SPECIFIC (VICTORIA'S SECRET, ETC.) OR FURNISHED BY ANY OF THE ABOVE REFERS TO BBWI. **ISSUED PERMIT** OA FLOW / MIN. OA FLOW (CFM)\* ANY DISCREPANCY BETWEEN BBWI DRAWINGS AND TENANT CRITERIA, BBWI DRAWINGS SHALL TAKE PRECEDENCE. EXT. SP. (IN W.C.) 1.0 Planning DX COOLING COIL THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC TO THE EXTENT THAT ALL INSTALLED ITEMS AND LOCATIONS ARE NOT EXACTLY PLACED AND ARE EAT (\*FDB/WB) NOT TO BE SCALED. Engineering Public Works GROSS TOTAL (BTU/HR) GROSS SENSIBLE (BTU/HR) EACH CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED PERMITS AND INSPECTION FEES. Traffic Fire ELECTRIC HEAT BEFORE COMMENCING ANY WORK, CONTRACTORS SHALL REVIEW THE LATEST NATIONAL, STATE AND LOCAL CODE REQUIREMENTS INCLUDING LANDLORD CRITERIA AND PERFORM THE WORK IN STRICT ACCORDANCE WITH THESE. IN CASE OF CONFLICT THE STRICTER REQUIREMENTS WILL OUTPUT (BTU/HR STAGES **ELECTRICAL** NO ADDITIONAL COMPENSATION SHALL BE MADE FOR ANY CHANGE ORDERS DUE TO CONTRACTOR'S FAILURE TO VISIT THE JOBSITE AND/OR VOLTS/Ø/H PREDETERMINE ALL EXISTING CONDITIONS BEFORE SUBMITTING HIS BID. MOTOR HE MCA (AMPS A. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING CONDITIONS PRIOR TO SUBMITTING A BID. FOR THE PURPOSE OF SURVEYING EXISTING CONDITIONS, WHICH MAY AFFECT THE WORK TO BE DONE UNDER THIS SECTION, ANY DISCREPANCIES SHALL BE APPROX. WEIGHT (LBS) IMMEDIATELY REPORTED TO THE GENERAL CONTRACTOR, BBWI OR THE LANDLORD'S FIELD REPRESENTATIVE FOR CLARIFICATION. ACCESSORIES 1.2.4-8.10-16 B. AFTER BID, ANY QUESTIONS RELATING TO SPECIFIC M, E, OR P ISSUES ARE TO BE DIRECTED AS RFI'S THROUGH THE BBWI PROJECT ACCESSORIES ("S" INDICATES STANDARD; "O" INDICATES OPTIONAL): S-COMBINATION FAN CONTACTOR/DISCONNECT SWITCH (IN HEATER CONTROL CABINET WHERE APPLICABLE). C. SHOULD THE SPACE HAVE BEEN INACCESSIBLE FOR INSPECTION CONTRACTOR MUST INDICATE SO ON HIS BID. S-FACTORY PROVIDED 1" MATT INSULATION. S-FACTORY FURNISHED MIXING BOX WITH ACTUATOR AND 0-10 VOLT ADAPTER. THE GENERAL CONTRACTOR'S FIRE SPRINKLER SUBCONTRACTOR SHALL DESIGN AND INSTALL FIRE SPRINKLER SYSTEM CONFORMING TO LANDLORD'S S-FACTORY FURNISHED INTERNAL VIBRATION ISOLATORS. CRITERIA, TENANT'S REQUIREMENTS AND PER LOCAL CODES AND NFPA STANDARDS. S-FACTORY FURNISHED FAN PROOVING SWITCH. S-FACTORY PROVIDED CONDENSATE PAN OVERFLOW SWITCH. THE CONTRACTOR, WITHIN FIFTEEN (15) DAYS OF THE AWARD OF THE CONTRACT, SHALL SUBMIT TO THE OWNER, SIX (6) COPIES OF A S-FACTORY FURNISHED THERMAL EXPANSION VALVE. COMPLETE LIST OF MATERIALS AND EQUIPMENT PROPOSED FOR THE JOB INCLUDING ALL DATA, PART NUMBERS, RATING CAPACITY, SIZE, S-DX COIL. DIMENSIONS, ELECTRICAL DATA, GRADE, MANUFACTURER, AND ANY OTHER DESCRIPTIVE DATA FOR ALL EQUIPMENT OR SYSTEMS THAT DEVIATE O-TWO ROW HOT WATER COIL. FROM SPECIFIED ITEMS. ANY DELAYS OR COSTS DUE TO THESE DEVIATIONS, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. 0-FACTORY PROVIDED ELECTRIC HEATER WITH SINGLE POINT CONNECTION (REHEAT POSITION). O-FACTORY FURNISHED SECONDARY CONDENSATE PAN OVERFLOW SWITCH. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL UNUSED OR ABANDONED MATERIALS AND EQUIPMENT, AND ITS REMOVAL OFF O-FACTORY PROVIDED COASTAL EVAPORATOR COIL COATING. THE LANDLORD'S PREMISES. S-FACTORY SUPPLIED/CONTRACTOR INSTALLED CONTROLLER ENCLOSURE S-FACTORY SUPPLIED/CONTRACTOR INSTALLED RETURN AIR TEMPERATURE SENSORS. OWNER RESERVES THE RIGHT TO HAVE CONSTRUCTION REVIEWED BY AN OUTSIDE CONSULTANT PRIOR TO ACCEPTANCE OF THE PROJECT. S-FACTORY SUPPLIED/CONTRACTOR INSTALLED RELAYS (FAN ENABLE, COOLING ENABLE, AND HEATING ENABLE). S-FACTORY SUPPLIED/CONTRACTOR INSTALLED CURRENT SWITCHES (FAN STATUS, COOLING STATUS, AND HEATING EACH CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP RELATED TO HIS WORK FOR A MINIMUM PERIOD OF ONE YEAR FROM STATUS THE DATE WHICH THE OWNER ACCEPTS THE PROJECT. THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER OR TENANT SHALL CORRECT ANY DEFECTS IN MATERIALS OR WORKMANSHIP DURING THIS GUARANTEE PERIOD. REFER TO CONTROL WIRING SCHEMATICS FOR ANY FIELD INSTALLED CONTROL DEVICES NOT FACTORY INSTALLED. EACH CONTRACTOR SHALL BE RESPONSIBLE AND ENSURE A CLEAN INSTALLATION ESPECIALLY IN EXPOSED CEILING AREAS. THE FINAL APPROVAL MINIMUM OA FLOW IS THE AREA COMPONENT OF THE MINIMUM VENTILATION RATE BASED ON ASHRAE STANDARD OF THIS WORK WILL BE ISSUED BY BBWI PROJECT MANAGER. 62.1-2013 FOR RETAIL SALES SPACE (0.12 CFM/SQFT), TABLE6-1 PROVIDE ONE SETS OF "AS-BUILT" DRAWINGS INTO PLAN TUBE AND ONE BOUND SETS OF ALL OPERATIONS MANUALS, DIAGRAMS, SERVICE CONTRACTS AND GUARANTEES IN BINDER TO STORE MANAGER. A REPORT PREPARED IN ACCORDANCE WITH MECHANICAL SPECIFICATIONS BY AN INDEPENDENT AIR BALANCE CONTRACTOR, HIRED BY GC, MUST BE INCLUDED IN THE CLOSE-OUT PACKAGE. CONDENSING UNIT SCHEDULE MARK (CU-#) **HVAC GENERAL NOTES** MODEL / SEER (EER) AMBIENT OA TEMP (DEG F DB) THESE PLANS MAY BE USED FOR CONSTRUCTION ONLY AFTER APPROVAL IS OBTAINED FROM THE BUILDING DEPARTMENT MECHANICAL PLAN 19.003 TOTAL CAPACITY (BTU/HR) CHECK DIVISION AND THAT DIVISION'S STAMPED APPROVAL AND AUTHORIZED SIGNATURE APPEAR ON THE PLANS. PHYSICAL DATA GRILLE, REGISTER, AND DIFFUSER SCHEDULE COORDINATE ALL WORK WITH ALL TRADES INCLUDED BUT NOT LIMITED TO ELECTRICAL, PLUMBING, FIRE PROTECTION AND STRUCTURAL NO. OF COMP. CONTRACTORS. INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL AND STRUCTURAL MEMBERS. NO ITEM SUCH AS PIPE, DUCT, MANUFACTURER TITUS **ELECTRICAL** ETC. IS TO COME IN CONTACT WITH ANY EQUIPMENT. VOLTS/Ø/HZ NECK SIZE (L"XW") REFER TO ARCHITECTURAL DRAWINGS FOR DEMOLITION WORK. MCA (AMPS FRAME SIZE (L"XW") MOCP (AMPS SURFACE FRAME TYPE REFER TO ARCHITECTURAL DRAWINGS FOR EXACT FIXTURE LOCATION. APPROX. WEIGHT (LBS) ACCESSORIES CONTRACTOR SHALL PROVIDE CUT SHEETS TO BBWI FOR ALL EQUIPMENT AND DEVICES FURNISHED BY THE CONTRACTOR THAT DEVIATE FROM NOISE CRITERIA LEVEL ACCESSORIES ("S" INDICATES STANDARD; "O" INDICATES OPTIONAL): SPECIFIED ITEM FOR REVIEW AND APPROVAL PRIOR TO THE PURCHASE OF ANY SUCH EQUIPMENT OR DEVICES. ACCESSORIES S-FACTORY FURNISHED TRANSFORMER FOR FIELD APPLIED CONTROLS. HVAC CONTRACTOR IS RESPONSIBLE TO INQUIRE WITH THE LANDLORD'S REPRESENTATIVE ON ANY SMOKE EVACUATION SYSTEM IN USE AT THE S-PROVIDE DUAL COMPRESSORS WITH DUAL CIRCUITS FOR ALL UNITS 6 TONS & ABOVE. ACCESSORIES: S-FACTORY PROVIDED 5 MINUTE DELAY OFF TIMING ON COMPRESSOR RESTART. OBD-OPPOSED BLADE DAMPER. RESPONSIBLE TO INFORM THE GENERAL CONTRACTOR AND INCLUDE THE COST AS A SEPARATE LINE ITEM IN THE BID. NO ADDITIONAL MONEYS S-FACTORY FURNISHED LOW AMBIENT CONTROL. LQD-LOCKING QUADRANT VOLUME DAMPER (PROVIDED BY MECHANICAL CONTRACTOR). SEE MECHANICAL SPECIFICATIONS SECTION SHALL BE AWARDED FOR TIE-IN REQUIREMENTS TO A LANDLORD'S SMOKE EVACUATION SYSTEM THAT IS IN EXISTENCE AT THE TIME OF THE BID. S-FACTORY PROVIDED HIGH AND LOW PRESSURE SWITCHES. S-FACTORY HAIL GUARD. WITHOUT HAVING IDENTIFIED A SEPARATE LINE ITEM FOR THE SMOKE EVACUATION SYSTEM AT THE TIME OF THE BID. CFD-RUSKIN MODEL CFD OR CFDR FIRE DAMPER WITH VOLUME CONTROL. O-FACTORY PROVIDED COASTAL CONDENSER COIL COATING. YRD-YOUNG'S REGULATOR REMOTE DAMPER WITH CABLE CONTROL SYSTEM (MODEL 5020-CC) (PROVIDED BY MECHANICAL ACCESS TO ALL COMPONENTS AND EQUIPMENT MUST BE PROVIDED TO MEET CODE AND SERVICE/MAINTENANCE EASE. TRM-RAPID MOUNT FRAME FOR GYPSUM CEILINGS. PRIOR TO STARTUP OF HVAC EQUIPMENT, MECHANICAL CONTRACTOR WILL CONFIRM WITH ONE OF THE LISTED HVAC MANUFACTURER DIRECTIONAL BLOW CLIP MODEL DB. REPRESENTATIVES THAT CORRECT POWER FOR EQUIPMENT HAS BEEN PROVIDED TO BBWI PROVIDED HVAC UNITS AND HAS BEEN TURNED ON FOR A MINIMUM OF 24 HOURS, BBWI RESERVES THE RIGHT TO CHECK CONSTRUCTION COMPLIANCE WITH PLANS AND SPECIFICATIONS, SHOULD THE OWNER FIND CORRECTIVE WORK TO BE NECESSARY, HE WILL NOTIFY CONTRACTOR OF SUCH WORK IN WRITING AND EXPECT COMPLIANCE 4-WAY DIFFUSER (UNLESS 1-WAY, 2-WAY OR 3-WAY AS INDICATED ON PLAN). PERFORMED WITH DUE DILIGENCE. IF ANY CORRECTIVE WORK IS DEEMED TO BE NECESSARY, THE COST OF REINSPECTIONS WILL BE BORNE BY INSTALL BLADES FACING THE BACK OF STORE, CABINET, OR WALL. THE CONTRACTOR. THE MECHANICAL CONTRACTOR WILL THEN ENSURE THAT THE EQUIPMENT IS POWERED FOR A MINIMUM OF 24 HRS BEFORE GC TO FIELD PAINT DIFFUSERS TO MATCH CEILING OR WALL WITH ENAMEL FINISH. MC SHALL PROVIDE SQUARE TO ROUND ADAPTOR. IF WORK IS REQUIRED BY BBWI IN ORDER TO IMPROVE, CHANGE OR CORRECT AIR CONDITIONING OPERATIONAL CONDITIONS DUE TO: PART MALFUNCTION. WARRANTY OR OTHER INABILITY TO PROVIDE THE COMFORT CONDITIONS REQUIRED BY THE STORE, CONTRACTOR SHALL BE DIRECTED BY BBWI TO ADDRESS THIS WORK IN A TIMELY MANNER. IF IT BECOMES EVIDENT THAT THE CONTRACTOR CANNOT ACCOMPLISH THE BBREVIATIONS - MECHANICAL \* FINISH REFERENCE: TITUS #26 IS WHITE; TITUS #84 IS BLACK TASK, THEN AFTER 72 HOURS OF WRITTEN NOTICE THE OWNER MAY, AT HIS DISCRETION, TAKE OVER SUCH WORK AND BACK CHARGE THE AMERICAN AIR BALANCE COUNCIL FEET PER MINUTE OUTDOOR AIR CONTRACTOR FOR ANY CORRECTIVE WORK THAT WAS REQUIRED DUE TO LACK OF PERFORMANCE, WORKMANSHIP AND/OR ADHERENCE TO PLANS ABOVE FINISH FLOOR FEET PER SECOND OUTDOOR AIR TEMPERATURE AND SPECIFICATIONS. AIR HANDLING UNIT FACE VELOCITY OPPOSED BLADE DAMPER OUTSIDE DIMENSION OR DIAMETER AIR PRESSURE DROP UPON COMPLETION OF THE WORK, CONTRACTOR SHALL VERIFY THE PROPER WORKING ORDER OF THE SYSTEM(S) AND MAKE ANY ADJUSTMENTS AMERICAN SOCIETY OF HEATING OPENING AS REQUIRED. REFRIGERATING AND AIR GALV GALVANIZED PUMP GENERAL CONTRACTOR CONDITIONING ENGINEERS PROVIDE FILTER CHANGES THROUGHOUT CONSTRUCTION AS REQUIRED FOR ALL HVAC EQUIPMENT. PROVIDE FILTER CHANGES AT LEAST TWICE PRESSURE DROP GALLONS PER MINUTE MONTHLY ONCE STARTED, PRIOR TO TEST AND BALANCE, AND LASTLY, PRIOR TO MERCHANDISING. ANY EQUIPMENT OR DUCTWORK THAT BECOMES PLUMBING BACK DRAFT DAMPERS SOILED DUE TO A LACK OF FILTER CHANGES, AS DETERMINED SOLELY BY THE BBWI PROJECT MANAGER, SHALL BE CORRECTED ON BEHALF OF BRAKE HORSEPOWER POUNDS PER SQUARE INCH THE CONTRACTOR AND CHANGES BILLED TO THE CONTRACTOR. HORSEPOWER BUILDING BOTTOM OF DUCT HEATER RETURN AIR NOTES TO EQUIPMENT SCHEDULES USE THE WORDS "FURNISH" AND "PROVIDE". WHERE THE WORD "FURNISH" IS USED, SOME FIELD HEATING VENTILATING AND AIR RETURN GRILLE **BOTTOM OF PIPE** INSTALLATION IS REQUIRED BY THE CONTRACTOR. WHERE THE WORD "PROVIDE" IS USED, NO FIELD INSTALLATION IS REQUIRED AS THE DEVICES BRITISH THERMAL UNIT PER HOUR RELATIVE HUMIDITY CONDITIONING OR ACCESSORIES ARE FURNISHED AND INSTALLED BY THE MANUFACTURER AS PART OF THE EQUIPMENT WHEN SHIPPED. HOT WATER RETURN REVOLUTIONS PER MINUTE BATH & BODY WORKS, INC. HOT WATER SUPPLY UNLESS OTHERWISE SPECIFIED, CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIAL, LABOR AND SUPERVISION NECESSARY TO COMPLETE THE SUPPLY AIR HEATING, VENTILATING AND AIR CONDITIONING WORK IN ACCORDANCE WITH THE SPECIFICATIONS AND STANDARDS AS OUTLINED HEREIN. SEE SENSIBLE CEILING DIFFUSER OR CONDENSATE INSIDE DIAMETER RESPONSIBILITY SCHEDULE ON SHEET MO4.01. SUPPLY FAN **CUBIC FEET PER MINUTE** SHEET METAL AND AIR CONDITIONING MECHANICAL CONTRACTOR SHALL FIELD MEASURE EXISTING ROOF CURB(S) FOR CURB ADAPTER(S), WHERE APPLICABLE, AND SHALL SUPPLY CHILLED WATER RETURN KILOWATT CONTRACTORS NATIONAL DIMENSIONS TO BBWI HVAC SUPPLIER PRIOR TO START OF CONSTRUCTION. CHILLED WATER SUPPLY ASSOCIATION LANDLORD STATIC PRESSURE CARBON DIOXIDE ALL HEATING VENTILATING AND AIR CONDITIONING EQUIPMENT SHALL BE CLEARLY IDENTIFIED WITH TENANT'S NAME, SPACE NUMBER AND UNIT LONG CONTRACTOR SQUARE DESIGNATION AND SHALL BE STENCILED IN 4" HIGH BLACK LETTERS. POUND SQUARE FEET COEFFICIENT OF PERFORMANCE CONDENSER WATER RETURN LINEAR DIFFUSER STAINLESS STEEL FURNISH AND INSTALL ALL NEW DUCTWORK INCLUDING INSTALLATION OF OWNER SUPPLIED ITEMS. LINEAR FEET CONDENSER WATER SUPPLY TEMP LEAVING WATER TEMPERATURE **TEMPERATURE** A. ALL MATERIAL SHALL BE NEW AND OF COMMERCIAL GRADE AND BEAR UNDERWRITER'S LABORATORY AND UNION LABELS WHERE SUCH TOTAL STATIC PRESSURE DRY BULB, DECIBEL **THERMOSTAT** THOUSAND BTU PER HOUR DIAMETER TYPICAL B. ALL PLENUMS SHALL BE FABRICATED FROM GALVANIZED SHEET METAL OF THE APPROPRIATE GAUGE AND BE INSULATED WITH A MINIMUM OF MINIMUM CIRCUIT AMPACITY DRAWING 1" THICK, 0.75 LB/CU.FT. DENSITY FIBERGLASS INSULATION WITH ALUMINUM FOIL BACKED VAPOR BARRIER. MECH UNDERCUT DIRECT EXPANSION MECHANICAL **MANUFACTURER** UNIT HEATER C. WHERE DESIGNATED, BRANCHES FROM MAIN LOW VELOCITY TRUNK DUCTWORK SHALL BE FURNISHED WITH SPLITTERS, DAMPERS OR SIMILAR UNLESS OTHERWISE NOTED EXHAUST AIR MOCP MAXIMUM OVER CURRENT BALANCING DEVICES IN ACCORDANCE WITH THE STANDARDS OF SMACNA. EXHAUST AIR GRILLE PROTECTION ENTERING AIR TEMPERATURE MOUNTED VARIABLE AIR VOLUME D. ALL DUCTS FOR FINAL CONNECTION TO DIFFUSERS SHALL BE CLASS 1. UL LISTED (SL 181) FLEXIBLE AIR DUCT NOT TO EXCEED 4'-0" IN ELECTRICAL CONTRACTOR MTR MOTOR VENTILATION, VENTILATOR LENGTH (THERMAFLEX, GLASFLEX, OR APPROVED EQUAL). VARIABLE FREQUENCY DRIVE **ENERGY EFFICIENCY RATIO** NATIONAL ENVIRONMENTAL VENT THRU ROOF EXHAUST FAN E. RECTANGULAR SUPPLY AND RETURN AIR DUCTS — <u>Plenum or ducted return</u> air system: duct sizes shown on drawings are inside BALANCING BUREAU EFFICIENCY NORMALLY CLOSED **ELECTRICALLY OPERATED DAMPER** CLEAR DIMENSIONS. ALL RECTANGULAR DUCTWORK (SUPPLY AND RETURN) SHALL BE EXTERNALLY INSULATED PER SPECIFICATIONS. EXTERNAL STATIC PRESSURE NOT IN CONTRACT WET BULB F. HANGER WIRES, DUCT STRAPS, FASTENING DEVICES, ETC. SHALL BE FASTENED TO THE STEEL JOISTS AND/OR BEAMS ABOVE. DO NOT ATTACH ESP ENTERING WATER TEMPERATURE NORMALLY OPEN WATER GAUGE ANY SUCH ITEMS DIRECTLY TO FLOOR SLABS, PIPING, OTHER DUCTWORK, ELECTRICAL CONDUITS OR THE ROOF DECK ABOVE. WATER PRESSURE DROP NTS NOT APPLICABLE G. ADDITIONAL FIRE DAMPERS SHOULD BE INSTALLED AS REQUIRED BY ANY APPLICABLE CODES AND/OR JURISDICTIONAL AUTHORITIES. AIR DEVICE SCHEDULE-BBW/WBC WEIGHT FAHRENHEIT NOT TO SCALE FAN COIL UNIT 42N-M0101-B01-SCHD SEAL AROUND PIPES AND DUCTS PENETRATING FIRE SEPARATIONS WITH LISTED AND APPROVED FIRE SEAL MATERIAL. ONLY LISTED AND FULL LOAD AMPS APPROVED SEALANTS AND METHODS FOR THE SPECIFIC USE WILL BE PERMITTED. FLEXIBLE MECHANICAL CONTRACTOR SHALL INSTALL TEMPERATURE SENSORS AND AS SHOWN ON THE PLAN (VERIFY LOCAL CODES. IF PLAN LOCATION IS NATIONAL ACCOUNTS HVAC SUPPLIER GENERAL NOTES MANUAL VOLUME DAMPER NOT ACCEPTABLE, IMMEDIATELY CONTACT BBWI PROJECT MANAGER FOR DIRECTION.) SUPPLY AIR DIFFUSER **REVISIONS:** CFS COMBINATION FIRE/SMOKE DAMPER REQUIRED BY: HVAC EQUIPMENT NOTED HAS BEEN PREPURCHASED BY BATH & BODY WORKS. INC. WITHIN THE FIRST WEEK OF CONSTRUCTION. THE UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL FULLY PRESSURE CHECK AND CHARGE ALL REFRIGERANT SYSTEMS (IF REQUIRED). 1 REV 1 - BD COMMENTS GENERAL CONTRACTOR OR THEIR MECHANICAL SUBCONTRACTOR SHALL NOTIFY SUPPLIER VIA EMAIL. FIRE DAMPER PEV 2 - BD COMMENTS RETURN AIR GRILLE THE EMAIL SHALL STATE THE PHONE NUMBER, EMAIL ADDRESS AND DELIVERY ADDRESS OF THE CONTACT PERSON RESPONSIBLE FOR THE CONTRACTOR SHALL ENGAGE THE SERVICES OF, AIR/WATER BALANCING COMPANY THAT IS PROVIDED BY LDS&C. THIS COMPANY SHALL AUTOMATIC BACKDRAFT DAMPER SCHEDULING AND RECEIVING THE HVAC EQUIPMENT AND ACCESSORIES. EQUIPMENT AND ACCESSORIES ARE TO BE SHIPPED BY ANY SPECIAL PERFORM THE BALANCING OF AIR/WATER SYSTEM(S) AND MAKE ANY REQUIRED ADJUSTMENTS TO ENSURE PROPER WORKING ORDER. UPON SHIPPING INSTRUCTIONS REQUIRED OR REQUESTED. ALLOW A MINIMUM OF TWO WEEKS AFTER CONSTRUCTION STARTS FOR DELIVERY UNLESS COMPLETION, THE BALANCING COMPANY SHALL PROVIDE A COMPLETE SYSTEM REPORT. SPECIAL ARRANGEMENTS ARE MADE PRIOR TO THE START OF CONSTRUCTION. ELECTRONICALLY OPERATED DAMPER ACCESS PANEL GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL SHIPPING COST INCURRED IF DELIVERY IS REQUIRED PRIOR TO THE UNDERCUT DOOR STANDARD TWO WEEKS SCHEDULED. IF THIS INFORMATION IS NOT SENT TO NATIONAL ACCOUNT SUPPLIER, THEN THE EQUIPMENT AND ACCESSORIES WILL BE SHIPPED IN CARBON DIOXIDE SENSOR ACCORDANCE WITH THE PURCHASE ORDER DATE AND INSTRUCTIONS ISSUED BY BBWI AND THE GENERAL CONTRACTOR SHALL BE EXHAUST AIR REGISTER RESPONSIBLE FOR UNLOADING AND STORAGE OF EQUIPMENT UNTIL SUCH TIME AS REQUIRED FOR INSTALLATION ON PROJECT. $\bigcirc$ H HUMIDISTAT IF OWNER'S REPRESENTATIVE IS PERFORMING START UP, THEN GC AND/OR MECHANICAL CONTRACTOR MUST COORDINATE WITH LINEAR DIFFUSER (s)DATE ISSUED: 12/19/2022 TEMPERATURE SENSOR MANUFACTURER REP. 2 WEEKS PRIOR TO CONSTRUCTION END DATE. S=SUPPLY, R=RETURN **DESIGNED BY:** (T)THERMOSTAT DRAWN BY: TRANE CONTACT INFORMATION NEW DUCTWORK CHECKED BY: (T/H) TEMPERATURE/HUMIDITY SENSOR MECHANICAL $\times$ EXISTING DUCTWORK TO REMAIN DUCT SMOKE DETECTOR JODY SOWERS SCOTT DAVIS JOHN D'AGOSTINO NOTES AND PROJECT MANAGER AND TRANE TECHNICAL SUPPORT, PRIMARY TRANE TECHNICAL EQUIPMENT SUPPORT POINT OF CONNECTION EXISTING DUCTWORK TO BE REMOVED | EMAIL: JSOWERS@TRANE.COM EMAIL: JOHN.DAGOSTINO@TRANE.COM HVAC COMMISSIONING SUPPORT, SECONDARY EMAIL: ROLLAND.SCOTT@TRANE.COM PHONE NO: 866.415.2499 | PHONE NO: 866.415.2499 EMAIL: SCOTT.DAVIS@TRANE.COM **SCHEDULES** PHONE NO: 866.415.2499 PHONE NO: 866.415.2499 FLEXIBLE AIR DUCT 4'-0" MAX. NOTE: (N)=NEW, (R)=RELOCATED, (E)=EXISTING DRAWING NUMBER: ABBREVIATIONS AND SYMBOLS LEGEND MECHANICAL EQUIPMENT SCHEDULES NATIONAL ACCOUNTS INFORMATION MECHANICAL GENERAL NOTES 00N-M0101-J00-N0TE 00N-M0101-J00-LGND 00N-M0101-E01-SCHD 00N-M0101-A00-NOTE





NOTE TO CONTRACTOR

ITEM(S) NOT SHOWN ON ANY OF THE RESPONSIBILITY SCHEDULES

ABBREVIATIONS, RESPONSIBILITY SCHEDULES

HVAC RESPONSIBILITY SCHEDULE

FURNISHED BY | INSTALLED OR PERFORMED BY | RE-USE |

BBWI LANDLORD CONTR. LANDLORD CONTR. OTHER EXISTING

GC GENERAL CONTRACTOR

MC MECHANICAL CONTRACTOR

CC CONTROLS CONTRACTOR

LANDLORD CONTRACTOR

LIGHTING PACKAGE DISTRIBUTOR

REMARKS

HIRE LANDLORD APPROVED

ROOFING CONTRACTOR

UNLESS FACTORY INSTALLED

AABC OR NEBB CERTIFIED

HIRE LL REQUIRED CONTRACTOR

WHEN REQUIRED BY LL

HIRE LL REQUIRED CONTRACTOR

WHEN REQUIRED BY LL

WHERE APPLICABLE FOR FIRE

ALARM SYSTEMS

00D-M0401-A00-SCHD

ARE THE RESPONSIBILITY OF THE CONTRACTOR.

AC HVAC EQUIPMENT SUPPLIER

BBWI BATH & BODY WORKS, INC.

FAC FIRE ALARM CONTRACTOR

ITEM

CONTROLLER ENCLOSURES

VIBRATION ISOLATION

ROOFING CUT & PATCH, INSULATED

TOE KICK & CURB LEVELING.

SMOKE SYSTEM ACCESSORIES,

DUCT SMOKE DETECTOR

DIFFUSERS AND GRILLES

DIFFUSERS/GRILLES FIRE

COMBINATION FIRE/SMOKE

WALL FIRE DAMPERS

DAMPERS

BAS CONTROLLER

AIR CURTAIN

AUTHORITY HAVING JURISDICTION

BUILDING AUTOMATION SYSTEM

ELECTRICAL CONTRACTOR

0

**REVISIONS:** 

REQUIRED BY: REV 1 - BD COMMENTS 2 REV 2 - BD COMMENTS

DATE ISSUED: 12/19/2022 DESIGNED BY: DRAWN BY:

CHECKED BY: MECHANICAL RESPONSIBILITY SCHEDULES

DRAWING NUMBER:

OUTSIDE AIR DAMPER ACTUATOR E HVAC RESPONSIBILITY SCHEDULES NETWORK WIRING AND SEQUENCE 00D-M0401-E04-SCHD

INSTALL MONITORING

CONTROLLER AT IFS

AS REQUIRED FOR MONITORING

DEVICES

FINAL CONN. BY MC

ECONOMIZER

RELIEF AIR HOOD OR LOUVER WITH COUNTER-BALANCED BACKDRAFT DAMPER

DAMPERS FOR FIELD BUILT

OUTSIDE AIR DAMPER

DAMPER ACTUATORS FOR FIELD BUILT ECONOMIZER

## SPLIT DX AIR HANDLING UNIT (AHU) SEQUENCE OF OPERATIONS

MANUFACTURER SHALL FURNISH AND/OR INSTALL ALL NECESSARY CONTROL DEVICES TO ACCOMPLISH THE FOLLOWING SEQUENCE OF OPERATION (REFER TO RESPONSIBILITY SCHEDULE FOR FIELD INSTALLATION REQUIREMENTS):

DURING OCCUPIED HOURS THE SUPPLY FANS SHALL OPERATE CONTINUOUSLY, AND THE OUTSIDE AIR DAMPER SHALL OPEN TO THE MINIMUM SCHEDULED POSITION (ADJUSTABLE). WHEN THE OUTDOOR TEMPERATURE IS ABOVE 55 DEGREES FAHRENHEIT (ADJUSTABLE), AND THE SPACE TEMPERATURE IS 1°F ABOVE COOLING SETPOINT, COOLING SHALL BE ENERGIZED IN STAGES (WHERE APPLICABLE) UNTIL 1°F BELOW SETPOINT IS ACHIEVED. WHEN THE OUTDOOR TEMPERATURE IS BELOW 55 DEGREES FAHRENHEIT (ADJUSTABLE), AND SPACE TEMPERATURE IS ABOVE COOLING SETPOINT, COOLING SHALL DEENERGIZE, AND OUTSIDE AIR DAMPERS AND RETURN AIR DAMPERS SHALL MODULATE TO PROVIDE A SUPPLY AIR TEMPERATURE TO SATISFY THE DEMAND FOR COOLING. IF THE SPACE TEMPERATURE FALLS 1°F BELOW THE HEATING SETPOINT, AND THE OUTDOOR DAMPER IS AT THE MINIMUM POSITION, ELECTRIC HEAT SHALL BE ENERGIZED IN STAGES (WHERE APPLICABLE) UNTIL 1°F ABOVE SETPOINT IS ACHIEVED.

DURING UNOCCUPIED HOURS, THE SUPPLY FANS SHALL DEENERGIZE AND THE OUTDOOR DAMPER SHALL CLOSE. IF THE SPACE TEMPERATURE RISES 1°F ABOVE THE COOLING SETPOINT, THE FANS SHALL ENERGIZE, AND THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED. COOLING SHALL BE ENERGIZED IN STAGES (WHERE APPLICABLE). WHEN THE SPACE TEMPERATURE FALLS BELOW COOLING SETPOINT, COOLING AND FANS SHALL DEENERGIZE. IF THE SPACE TEMPERATURE FALLS BELOW THE HEATING SETPOINT, THE FANS SHALL ENERGIZE, AND THE OUTSIDE AIR DAMPERS SHALL REMAIN CLOSED. ELECTRIC HEAT SHALL BE ENERGIZED IN STAGES (WHERE APPLICABLE). WHEN THE SPACE TEMPERATURE RISES ABOVE THE HEATING SETPOINT, ELECTRIC HEAT AND FANS SHALL BE DEENERGIZED.

RELIEF FAN (WHERE APPLICABLE) SHALL BE ENERGIZED WHENEVER THE SUPPLY FANS ARE OPERATING, AND THE UNIT IS IN THE ECONOMIZER MODE OF OPERATION. THE RELIEF FAN SPEED SHALL BE VARIED THROUGH A VARIABLE FREQUENCY DRIVE CONTROLLED BY SPACE PRESSURE DIFFERENTIAL RELATIVE TO OUTDOOR PRESSURE. FAN SPEED SHALL MODULATE TO MAINTAIN A SPACE PRESSURE OF 0.05" POSITIVE RELATIVE TO OUTDOOR PRESSURE. RELIEF DAMPER SHALL OPEN WHENEVER RELIEF FAN IS ENERGIZED.

A MANUFACTURER PROVIDED OR FIELD INSTALLED PAN OVERFLOW SWITCH WILL DISABLE ALL FANS, COOLING, HEATING, AND CLOSE OUTDOOR AIR DAMPER IF HIGH WATER IS SENSED IN THE PAN.

A FIELD INSTALLED CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR DAMPER DURING OCCUPIED OPERATION BETWEEN SCHEDULED OA FLOW CFM AND MIN SCHEDULED OA FLOW TO MAINTAIN A CO2 CONCENTRATION BETWEEN 1000PPM AND 500PPM. A DUCT MOUNTED SMOKE DETECTOR SHALL DEENERGIZE THE SUPPLY AND RELIEF FAN, AND CLOSE THE OUTDOOR AIR DAMPER WHEN

SPLIT DX AIR HANDLING UNIT WITH

CONDENSING UNIT RESPONSIBILITY SCHEDULE

OCCUPIED HEATING: 70°F COOLING: 74°F UNOCCUPIED HEATING: 60°F COOLING: 85°F

MONITORING CARBON DIOXIDE

ROOM TEMPERATURE/HUMIDITY

MONITORING ONLY CONTROLLERS WITH ANALOG

INPUTS AND COMMUNICATION CAPABILITY

CONTROL SYSTEM WIRE FOR

CONTROL TRANSFORMERS

SYSTEM COMPONENTS

	-	UDVICUED E	nv	INCTALLED	OD DEDE	ODMED DV				DAMPERS
ITEM		URNISHED E  LANDLORD			OR PERF	OTHER	RE-USE EXISTING	N/A	REMARKS	LOW PRESSURE DUCTWORK
AIR HANDLING UNIT	AC				мс					RECTANGULAR TO ROUND DUCT ADAPTER
AIR HANDLING UNIT DISCONNECT/FAN CONTACTOR	AC					AC				HIGH/MEDIUM PRESSURE DUCTWORK
HIGH AND LOW PRESSURE SWITCHES (FACTORY INSTALLED)	AC					AC			FACTORY INSTALLED	DUCT SUPPORTS
ELECTRIC HEATER WITH SINGLE POINT CONNECTION AND CONTACTOR	AC				мс					SEISMIC BRACING
CONDENSATE DRAIN LINES		мс			мс				VERIFY REQUIREMENTS WITH LOCAL CODE	HURRICANE WIND BRACING
MIXING BOX WITH ACTUATOR AND 0-10 VOLT ADAPTER								•	INTERCONNECTIVE WIRING BY MC	DUCT HEATER(S)
VIBRATION ISOLATORS	AC					AC				UNIT HEATER(S)
EVAPORATOR FAN MOTOR, SHEAVES AND BELTS	AC					AC			CHANGES REQUIRED FOR BALANCE ARE PROVIDED BY MC	INLINE AND CEILING EXHAUST FAN(S)
THERMAL EXPANSION VALVE	AC				мс					ROOF AND WALL MOUNTED EXHAUST FAN(S) AND CURB
PRIMARY CONDENSATE PAN OVERFLOW SWITCH	AC					AC				EXHAUST FAN ROOF CURB
SECONDARY CONDENSATE PAN OVERFLOW SWITCH	AC				мс					TOILET EXHAUST DUCTWORK WALL OR ROOF CAP
FAN PROVING SWITCH	AC					AC				PIPING AND PIPING APPURTENANCES (CIRCUIT SETTERS, ETC.)
AIR COOLED CONDENSING UNIT	AC				мс					BALANCE CONTRACTOR REPORT
CONDENSING UNIT DISCONNECT SWITCH			EC		EC					AS-BUILT DRAWINGS
CONDENSING UNIT GROUND FAULT OUTLET			EC		EC					LANDLORD REQUIRED TEMPERATURE CONTROL SYSTEM COMPONENTS
BAS CONTROLLER	AC					AC				TEMPERATURE CONTROL SYSTEM WIRE FOR LL REQUIRED SYSTEM COMPONENTS
SUPPLY AIR TEMPERATURE SENSOR								•		YOUNG REGULATOR W/ BOWDEN CABLE
SPACE TEMPERATURE SENSOR	СС				мс					LOCKING QUADRANT VOLUME DAMPER
CARBON DIOXIDE SENSOR								•		PNEUMATIC TUBING
HUMIDITY SENSOR								•	ONE PER EACH UNIT WITH DEHUMIDIFICATION	FIRE ALARM SHUTDOWN RELAY
OUTSIDE AIR TEMPERATURE SENSOR								•	ONE PER PROJECT	RELIEF AIR DAMPER AND ACTUATOR
LOW AMBIENT KIT	AC				мс				REQUIRES MOTOR CHANGE OUT	RELIEF AIR FAN OR RETURN AIR FAN
SINGLE ZONE VAV CONTROLS								•	UNITS WITH CAPACITY GREATER THAN 54 MBH AT AHRI CONDITIONS	SMOKE EVACUATION
SPLIT SYSTEM COMMISSIONING	AC					AC			CALL HVAC EQUIPMENT SUPPLIER	OUTSIDE AIR INTAKE HOOD/LOUVER WITH DAMPER
MONITORING SPACE TEMPERATURE SENSOR								•		OUTSIDE AIR INTAKE DAMPER ACTUATOR
						1	1		1 -	

MC

MC

Coil CFM at Des Htg		JEM JIBH			Des I	
Max coil CFM					64.3 / 7	
Water flow @ 20.0 °F drop		71 W	Z.n 227 Zvg 21	J		
oply Fan Sizing Data						
Actual max CFM					0	
Standard CFMActual max CFM/ft <sup>2</sup>					0 0	
Actual max of W/It		51 14W1C	Tan static		······································	.50 III Wg
	DE	ESIGN COOLIN	G	DE	ESIGN HEATING	
	COOLING DATA	AT Jul 1500		HEATING DATA	AT DES HTG	
	COOLING OA DI	B/WB 86.0°	F / 65.0 °F	HEATING OA DE	3 / WB 18.0 °F / 14	l.8 °F
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	0 ft <sup>2</sup>	(610/111)	(610/111)	0 ft <sup>2</sup>	(B10/III)	(610/111)
Wall Transmission	439 ft <sup>2</sup>	459	<u> </u>	439 ft²	2080	<u>-</u>
Roof Transmission	527 ft <sup>2</sup>	509	<u>-</u>	527 ft <sup>2</sup>	1274	<u> </u>
Window Transmission	0 ft <sup>2</sup>	0		0 ft <sup>2</sup>	0	<u> </u>
Skylight Transmission	0 ft <sup>2</sup>	0		0 ft <sup>2</sup>	0	
Door Loads	21 ft <sup>2</sup>	50	_	21 ft <sup>2</sup>	328	
Floor Transmission	527 ft <sup>2</sup>	0	_	527 ft <sup>2</sup>	681	
Partitions	0 ft <sup>2</sup>	0	_	0 ft <sup>2</sup>	0	_
Ceiling	0 ft <sup>2</sup>	0	-	0 ft <sup>2</sup>	0	_
Overhead Lighting	791 W	1888	-	0	0	_
Task Lighting	0 W	0	_	0	0	
Electric Equipment	2250 W	7677	-	0	0	_
People	2	430	360	0	0	0
nfiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	1101	36	10%	436	0
>> Total Zone Loads	-	12115	396	-	4798	0
Zone Conditioning	-	12116	396	-	4916	0
Plenum Wall Load	10%	54		0	0	
Plenum Roof Load	70%	1187	-	0	0	
Plenum Lighting Load	30%	809	-	0	0	-
Return Fan Load	598 CFM	0	-	598 CFM	0	-
Ventilation Load	63 CFM	505	-117	63 CFM	3497	0
Supply Fan Load	598 CFM	222	-	598 CFM	-222	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	14893	279	-	8191	0
Central Cooling Coil	-	14893	279	-	0	0
Central Heating Coil	-	0	-	-	8191	-
>> Total Conditioning	-	14893	279	-	8191	0
Key:	<b>D</b> :::	e values are clo	Loade	Positive	e values are htg load	de

**DESIGN WEATHER PARAMETERS** 

**HVAC LOAD CALCULATIONS** 

Remote Storage

SPLT AHU

Jan to Dec

Calculated

**15.2** MBH

**14.9** MBH

. **598** CFM

0.982

473.3

416.8

28.8

**598** CFM

.. **8.2** MBH

**322.0** ft

. **86.0** °F

**65.0** °F

**14.8** °F

**0.800** BTU/(hr·ft·°F)

Space CFM Sizing ...... Individual peak space loads

. **527.0** ft<sup>2</sup>

. Jul 1500

86.0 / 65.0 °F

79.3 / 63.3 °F

. **56.0 / 54.5** °F

.. 0.100

. Des Htg

.. **53.4** °F

... 47 %

.. **55.0** °F

. 1 of 1 OK

.... **0.0** °F

Tacoma, Washington

Sum of space airflow rates

. **8.0** hours

1.10

**2018 WSEC** 

January to December

Number of zones .

Zone CFM Sizing .

Load occurs at .

Entering DB / WB

Leaving DB / WB .

OA DB / WB ..

Bypass Factor

Resulting RH ..

Load occurs at .

Design supply temp.

Zone T-stat Check ...

Max zone temperature deviation .

Coil ADP ..

Floor Area ..

Location ..

Latitude

Longitude

Elevation

Summer Design Dry-Bulb

Summer Daily Range

Soil Conductivity

Current Data is .....

Air System Information

Calculation Months ..

Sizing Data ......

Total coil load

Total coil load

Sensible coil load

Max block CFM .

CFM/Ton

ft<sup>2</sup>/Ton ....

BTU/(hr-ft2)

Max coil load

Sensible heat ratio .

Coil CFM at Jul 1500

Sum of peak zone CFM

Water flow @ 10.0 °F rise

Central Heating Coil Sizing Data

izing Calculation Information

Central Cooling Coil Sizing Data

Air System Name

Equipment Class

Air System Type .

Winter Design Dry-Bulb Winter Design Wet-Bulb

Summer Coincident Wet-Bulb

Atmospheric Clearness Number

Local Time Zone (GMT +/- N hours)

Consider Daylight Savings Time

Average Ground Reflectance

Simulation Weather Data ...

Design Cooling Months .

HVAC LOAD CALCULATIONS	NTS	NI
HVAC LOAD CALCULATIONS	00D-M0401-N00-LOAD	10/31/2014

1. THE ABBREVIATION BBWI WHEREVER IT APPEARS IN THESE MECHANICAL DRAWINGS AND/OR SPECIFICATIONS SHALL REFER TO "BATH & BODY WORKS, INC. ANY REFERENCE TO TENANT'S PROJECT MANAGER OR FURNISHED BY ANY OF THE ABOVE REFERS TO BBWI.

2. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 15.

3. THE CONTRACTOR FOR THIS DIVISION OF WORK IS REQUIRED TO READ THE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL DIVISIONS OF WORK AND IS RESPONSIBLE FOR THE COORDINATION OF THIS WORK AND THE WORK OF HIS SUBCONTRACTORS WITH ALL DIVISIONS OF WORK. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO PROVIDE HIS SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS.

4. THIS CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE COMPLETION AND INSPECTION OF THIS WORK TO COMPLY WITH THE BBWI SCHEDULE AND THE PROJECT COMPLETION DATE.

5. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTAL OF BID TO DETERMINE CONDITIONS AFFECTING THE WORK. ANY ITEMS WHICH ARE NOT COVERED IN THE BID DOCUMENTS OR ANY PROPOSED SUBSTITUTIONS SHALL BE LISTED SEPARATELY AND QUALIFIED IN THE CONTRACTORS BID. SUBMITTAL OF BID SHALL SERVE AS EVIDENCE OF KNOWLEDGE OF EXISTING CONDITIONS AND ANY MODIFICATIONS WHICH ARE REQUIRED TO MEET THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. FAILURE TO VISIT THE SITE DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY IN PERFORMANCE OF HIS WORK. 6. REFER TO RESPONSIBILITY SCHEDULE ON SHEET M04.01 OF THIS SET FOR INFORMATION IN REGARD TO RESPONSIBILITY OF WORK OR ITEMS WHICH MAY

AFFECT THE BID.

### **GENERAL REQUIREMENTS**

1. THIS CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE LANDLORD OR BBWI SHALL BE PROVIDED BY THIS CONTRACTOR. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH THE LANDLORD AND THE BBWI PROJECT MANAGER. AS REQUIRED.

2. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE FURNISHEI AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK, AND WHICH IS USUALLY INCLUDED IN WORK OF

SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF CONTRACT. 3. WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES OR THE LANDLORD'S TENANT CRITERIA, THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS AS DESIGNED AND DESCRIBED ON THESE

4. ALL WORK IN THIS SECTION SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT. 5. ALL WORK SHALL BE PERFORMED IN A NEAT PROFESSIONAL MANNER USING GOOD CONSTRUCTION PRACTICES.

6. UNLESS SPECIFICALLY NOTED OTHERWISE, MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW, UNDERWRITER'S LABORATORIES/UNDERWRITER'S LABORATORIES OF CANADA LISTED AND LABELED AND SIZED IN CONFORMITY WITH REQUIREMENTS OF STATE/PROVINCE AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.

7. THIS CONTRACTOR SHALL DO ALL CUTTING, CHASING AND CHANNELING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL BY BBWI PROJECT MANAGER AND THE LANDLORD. ALL PATCHING SHALL BE BY G.C. AND SHALL MATCH THE SURROUNDING SURFACES.

8. THE MECHANICAL CONTRACTOR SHALL MAKE ALL FINAL MECHANICAL CONNECTIONS AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

a. THE MECHANICAL CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR TO CONTACT BBWI'S DESIGNATED COMPANY (EMS) FOR START-UP. (REFER TO SHEET M01.01).

1. ALL WORK SHALL CONFORM TO THE LANDLORDS' CRITERIA, THE STATE'S/PROVINCE'S, COUNTY'S, CITY'S AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA/NFPAC CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THIS CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. THIS CONTRACTOR SHALL INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS AWARDED, CHANGE ORDERS FOR INCREASED COSTS DUE TO CODE ISSUES WILL NOT BE ACCEPTED BY BBWI.

### LICENSES, PERMITS, INSPECTIONS & FEES

1. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS, AND FEES REQUIRED OR RELATED TO HIS WORK.

### 2. FURNISH TO THE BBWI'S PROJECT MANAGER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT COMPLETION OF PROJECT. TRADE NAMES, MANUFACTURERS AND SHOP DRAWINGS

DRAWINGS. UNLESS SPECIFICALLY NOTED OTHERWISE.

1. WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED WILL BE SUBJECT TO APPROVAL IN WRITING BY BBWI'S PROJECT MANAGER THROUGH SHOP DRAWING SUBMITTAL PROCESS FOR ACCEPTANCE PRIOR TO INSTALLATION. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

2. GENERAL CONTRACTOR SHALL SUBMIT ALL EQUIPMENT AND DEVICES TO BBWI PROJECT MANAGER FOR APPROVAL, SUBMISSIONS SHALL BE MADE EARLY ENOUGH IN PROJECT TO ALLOW FOUR (4) WORKING DAYS FOR BBWI PROJECT MANAGER'S REVIEW WITHOUT CAUSING DELAYS OR CONFLICTS TO THE JOB'S PROGRESS. SUBMITTALS SHALL BEAR THE STAMP AND/OR THE SIGNATURE OF THE GENERAL CONTRACTOR AND THE SUBCONTRACTOR SHOWING THAT THEY HAVE REVIEWED AND CONFIRMED THAT THE SUBMITTALS ARE IN CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS OR INDICATE WHERE EXCEPTIONS HAVE BEEN TAKEN.

1. THIS CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORK PROVIDED UNDER HIS CONTRACT AND SHALL MAKE GOOD. REPAIR OR REPLACE AT HIS OWN EXPENSE, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF 12 MONTHS FROM THE DATE OF ACCEPTANCE (IN WRITING) OF THE INSTALLATION BY BBWI'S PROJECT MANAGER. EXTENDED WARRANTIES ARE AS SPECIFIED WITH INDIVIDUAL EQUIPMENT. 2. THE EQUIPMENT MANUFACTURER SHALL GUARANTEE AND PROVIDE A 12 MONTH GUARANTEE TO BBWI FROM THE DATE OF ACCEPTANCE. THIS CONTRACTOR

SHALL WARRANTY THE INSTALLATION OF THIS EQUIPMENT AND WILL BE RESPONSIBLE FOR ANY DAMAGE AND/OR MALFUNCTION CAUSED BY THE INSTALLATION. THIS CONTRACTOR SHALL NOT BEAR ADDITIONAL WARRANTIES BEYOND A COMPLETE WORKING SYSTEM.

1. THIS CONTRACTOR SHALL MAINTAIN ONE SET OF DRAWINGS ON THE JOB SITE UPDATED WEEKLY TO RECORD ALL DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS:

- a. LOCATION OF CONCEALED PIPING VALVES AND DUCTS.
- b. REVISIONS, ADDENDUM, AND CHANGE ORDERS.

c. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER 2. AT COMPLETION OF THE PROJECT AND BEFORE FINAL APPROVAL, THIS CONTRACTOR SHALL MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE

ACCURACY OF EACH PRINT BY SIGNATURE THEREON. FAILURE TO KEEP THESE RECORDS WILL ALLOW BBWI TO DIRECT THE GENERAL CONTRACTOR TO PROVIDE THESE RECORDS AT HIS EXPENSE PRIOR TO FINAL PAYMENT.

DISCREPANCIES IN DOCUMENTS

1. DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS) ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE MECHANICAL SYSTEMS. WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE GENERAL CONTRACTOR IN WRITING, PRIOR TO SUBMITTAL OF BID. THE GENERAL CONTRACTOR IS RESPONSIBLE TO ADVISE BBWI'S PROJECT MANAGER, IN WRITING, OF VARIATIONS TO CONTRACT DOCUMENTS PRIOR TO SUBMISSION OF BID. OTHERWISE, BBWI PROJECT MANAGER'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

## PHASING REQUIREMENTS

1. THIS CONTRACTOR IS TO INCLUDE IN HIS BID ALL NECESSARY SERVICE REQUIRED TO KEEP THE OPERATING PHASE OF THE STORE'S HVAC, PLUMBING AND SPRINKLER SERVICE IN OPERATION. CONTRACTOR MUST SCHEDULE IN WRITING WITH BBWI'S PROJECT MANAGER AND THE LANDLORD ONE WEEK PRIOR TO

ANY SHUT DOWN OF THE HVAC, PLUMBING OR FIRE PROTECTION SYSTEMS.

## 1. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED BY THE

GENERAL CONTRACTOR. COORDINATE WITH THE GENERAL CONTRACTOR ANY EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT. 2. THIS CONTRACTOR SHALL INCLUDE, AND WILL BE HELD RESPONSIBLE FOR, THE REMOVAL OF ALL EXISTING HVAC UNITS, HYDRONIC PIPING, REFRIGERANT RECAPTURE, EXHAUST FANS, ETC. AND ASSOCIATED ROOF CURBS NOT TO BE REUSED ON THIS PROJECT, UNLESS SPECIFICALLY NOTED OTHERWISE. CONTRACTOR MUST VERIFY WITH THE LANDLORD ALL PRESUMED ABANDONED EQUIPMENT, PIPES, AND DUCTWORK PRIOR TO REMOVAL. ROOF CURBS SHALL BE REMOVED AND THE ROOF PATCHED. ALL EXMANUFACTUREROUS ITEMS IN THE SPACE OR ON THE ROOF NOT APPLICABLE TO THE NEW WORK MUST BE REMOVED AND ROOF/WALL/FLOOR PATCHED/REPAIRED TO MATCH EXISTING STRUCTURE. EXISTING ABANDONED PIPES, DUCTS, OR EQUIPMENT IN THE FLOOR, EMBEDDED IN CONCRETE OR OTHERWISE INACCESSIBLE ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL WHEN THEY ARE NOT TO BE REUSED IN THIS PROJECT. IF REQUIRED BY LANDLORD OR CODES, ABANDONED PIPING AND/OR DUCTWORK MUST BE REMOVED TO POINT OF ORIGIN.

# CONFIRM THE EXTENT OF DEMOLITION PRIOR TO BID AND INCLUDE IN BID PROPOSAL.

1. THIS CONTRACTOR SHALL PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2" ABOVE THE FLOOR. CONTRACTOR MUST COORDINATE THROUGH THE LANDLORD ANY CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY FLOORS OR WALLS.

2. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THEIR FIRE RATING.

3. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS, AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS. THROUGH SUSPENDED CEILINGS. OR FOR CONCEALED VERTICAL PIPING. SLEEVES SHALL BE NO. 22 U.S.G. GALVANIZED

1. THIS CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION AND FACILITIES NECESSARY FOR, REASONABLY IMPLIED AND INCIDENTAL TO, THE FURNISHING, INSTALLATION, COMPLETION AND TESTING OF ALL THE WORK FOR THE HVAC SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS, TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:

a. HVAC UNITS, ALL RELATED EQUIPMENT AND ACCESSORIES (UNLESS NOTED OTHERWISE).

- b. DUCTWORK, FITTINGS, DAMPERS, AND INSULATION.
- c. HYDRONIC PIPING. (AS APPLICABLE, REFER TO PLANS).
- d. REFRIGERANT PIPING (AS APPLICABLE, REFER TO PLANS).
- e. CURBS, ROOFING, AND STEEL FRAMING FOR SUPPORT (AS APPLICABLE, REFER TO PLANS).
- f. TESTING, ADJUSTING, AND BALANCING.
- g. KEEPING A RECORD SET AND PREPARE AS-BUILT DRAWINGS

2. BEFORE STARTING WORK. THIS CONTRACTOR SHALL VISIT THE JOB SITE AND EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL PLANS AND SPECIFICATIONS TO SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF THE HVAC SYSTEM, MATERIALS, AND EQUIPMENT WITH OTHER CONTRACTORS TO AVOID INTERFERENCES AND CONFRONTATIONS. 3. RELOCATION OF EXISTING DUCT MAINS OR BRANCHES TO MEET STORE DESIGN CRITERIA MUST BE INCLUDED IN BID PROPOSAL.

## M. HVAC EQUIPMENT

1. PRIMARY HEATING AND AIR CONDITIONING UNITS ARE TO BE FURNISHED BY BBWI AS SCHEDULED UNLESS NOTED OTHERWISE. REFER TO PLANS FOR REQUIREMENTS. ALL EQUIPMENT SHALL INCLUDE A FIVE (5) YEAR COMPRESSOR AND TEN (10) YEAR HEAT EXCHANGER WARRANTY.

2. ALL EQUIPMENT SHALL BE COMPLETE IN EVERY RESPECT WITH ALL DEVICES AND ACCESSORIES PROVIDED TO MEET THE DESIGN INTENT AND OPERATION OF THE SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

3. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

## . EQUIPMENT FURNISHED BY BATH & BODY WORKS, INC.

1. THE FOLLOWING EQUIPMENT IS FURNISHED BY BBWI AND INSTALLED BY THIS CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE. REFER TO RESPONSIBILITY SCHEDULE AND PLANS FOR APPLICABILITY.

a. HVAC UNITS. b. TEMPERATURE CONTROLS.

# FURNISHED AND INSTALLED BY THIS CONTRACTOR.

1. THIS CONTRACTOR SHALL FURNISH AND INSTALL CURB ADAPTORS ON EXISTING CURBS WHERE ALLOWED BY LANDLORD. CURB ADAPTORS MUST BE MANUFACTURED BY THYBAR, MICROMETL, OR BBWI APPROVED EQUAL.

2. WHERE EXISTING CURBS ARE NOT AVAILABLE OR WHERE CURB ADAPTORS ARE NOT ALLOWED THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY CURBS REQUIRED TO INSTALL ALL HVAC EQUIPMENT AS DESCRIBED ON THE DRAWINGS. CURBS SHALL BE A MINIMUM OF 14" HIGH (SEE

MO4.01 "LOCAL AREA REQUIREMENTS" ITEM # 5), OF THE SAME MANUFACTURER OF THE EQUIPMENT UNLESS NOTED OTHERWISE. CURBS SHALL ELEVATE THE UNIT(S) A MINIMUM OF 8" ABOVE ROOF LINE.

3. ALL CURBS AND CURB ADAPTORS SHALL BE INSTALLED SUCH THAT TOP OF CURBS ARE LEVEL. ALL PENETRATIONS OF EXISTING STRUCTURE SHALL BE DONE IN ACCORDANCE WITH THE LANDLORD'S GUIDELINES AT THIS CONTRACTOR'S EXPENSE. THIS CONTRACTOR SHALL RECEIVE BBWI PROJECT MANAGER'S WRITTEN APPROVAL BEFORE ANY WORK TAKES PLACE. THIS CONTRACTOR IS ALSO RESPONSIBLE FOR ALL SEISMIC, HURRICANE OR OTHER SECURING DEVICES REQUIRED BY LOCAL OR OTHER CODES.

1. FURNISH AND INSTALL PIPE IDENTIFICATION MARKERS ON ALL PIPES INSTALLED UNDER THIS CONTRACT. MARKERS SHALL BE A MINIMUM OF 1-1/2" X 8' AND IDENTIFIED IN ACCORDANCE WITH THE BACKGROUND AND LETTER COLORS ISSUED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).

2. PIPING SHALL BE IDENTIFIED AS FOLLOWS: CHILLED WATER RETURN. CHILLED WATER SUPPLY. CONDENSATE, HOT WATER RETURN. HOT WATER SUPPLY. CONDENSER WATER RETURN. CONDENSER WATER SUPPLY. REFRIGERANT LIQUID. REFRIGERANT SUCTION. AND DIRECTIONAL ARROWS. ALL IDENTIFICATIONS MUST BE VISIBLE AT EQUIPMENT.

# FINAL HVAC INSPECTIONS

1. ASIDE FROM NORMAL INTERIM INSPECTIONS OF WORK IN PLACE, BBWI SHALL HAVE AN INDEPENDENT HVAC CONTRACTOR INSPECT THE FINISHED HVAC INSTALLATION UPON COMPLETION FOR COMPLIANCE WITH THE PLANS, SPECIFICATIONS AND CODES. THE INSTALLING CONTRACTOR WILL BE RESPONSIBLE TO BRING ALL ITEMS REPORTED BY THE INDEPENDENT HVAC CONTRACTOR UP TO PLANS AND SPECIFICATION REQUIREMENTS.

## SECTION 230500: COMMON WORK RESULTS FOR HVAC

1. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC NECESSARY FOR THE INSTALLATION OF WORK. 2. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OF BAR JOIST. WHERE INTERFERENCES OCCUR, AND IN ORDER TO SUPPORT DUCTWORK OR PIPING, THE CONTRACTOR MUST INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE

3. HANGERS FOR ALL INSULATED PIPING SHALL BE SIZED AND INSTALLED FOR THE OUTER DIAMETER OF INSULATION. INSTALL 6" LONG SPLIT CIRCLE GALVANIZED SADDLE BETWEEN THE HANGER AND THE PIPE INSULATION.

DAMPERS, VALVES, AND OTHER EQUIPMENT. HANGER TYPES AND INSTALLATION METHODS ARE ALSO SUBJECT TO LANDLORD CRITERIA.

## **VIBRATION ISOLATION DEVICES**

1. SPRING VIBRATION ISOLATION DEVICES SHALL BE FURNISHED AND INSTALLED IN ALL SUPPORTS BETWEEN VIBRATING EQUIPMENT (FANS, AIR HANDLERS, ETC.) AND STRUCTURE. ISOLATORS TO BE SIZED ACCORDING TO LOAD WITH A MIN. 1" DEFLECTION. VIBRATING EQUIPMENT HUNG FROM STRUCTURE SHALL BE ISOLATED WITH RUBBER AND SPRING DEVICES. VIBRATING EQUIPMENT SUPPORTED FROM FLOOR OR DECK SHALL BE ISOLATED WITH HOUSED SPRING

2. EXAMINE DEAD LOAD AND OPERATING LOAD CONDITIONS WHEN SELECTING DEVICES. ADJUST FOR PROPER ALIGNMENT AND LOADING. AVOID "GROUNDING" THE ISOLATOR.

3. CHECK HANGER ROD SIZE FOR ALLOWABLE LOADS AT THE ISOLATING DEVICE AND AT THE UPPER AND LOWER ATTACHMENTS TO STRUCTURES, DUCTS, EQUIPMENT, ETC.

## 4. CONSULT MANUFACTURER FOR APPLICATION DATA.

TESTING, ADJUSTING, AND BALANCING 1. TESTING, ADJUSTING AND BALANCING OF ALL WORK SHALL BE MADE BY AN INDEPENDENT CONTRACTOR WHO IS A CURRENTLY LICENSED ASSOCIATED AIR BALANCING COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) BALANCING CONTRACTOR. NO OTHER BALANCE REPORTS WILL BE ACCEPTED. ALL BALANCING WORK MUST BE COMPLETE AND DONE IN ACCORDANCE WITH THE MOST RECENT STANDARDS OF THEIR SOCIETY. TEST AND BALANCE TO BE PROVIDED BY BBWI.

2. FINAL TESTING, ADJUSTING AND BALANCING REPORT MUST BE COMPLETE AND SUBMITTED WITH FINAL CLOSE-OUT DOCUMENTS TO BBWI 1 WEEK PRIOR TO MERCHANDISING DATE.

3. THE HVAC CONTRACTOR SHALL BE PRESENT FOR AIR BALANCE TO VERIFY ACCESSIBILITY TO ALL DEVICES, VERIFY ALL OPERATING SEQUENCES (WITH CONTROLS VENDOR REMOTELY SUPPORTING THE SEQUENCES) AND INSTALL NEW FILTERS IN ALL UNITS JUST PRIOR TO THE AIR BALANCE. THE COMPLETE AIR BALANCE SHALL TAKE PLACE WITH OUTSIDE AIR DAMPERS IN MINIMUM POSITION, EXCEPT AS NOTED OTHERWISE. HVAC CONTRACTOR SHALL ALSO INSTALL A NEW SET OF FILTERS ONE DAY PRIOR TO MERCHANDISING.

4. THE BALANCE REPORT SHALL INCLUDE AS A MINIMUM THE FOLLOWING INFORMATION:

4. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED.

- a. AABC OR NEBB CERTIFICATION NUMBER AND SIGNATURE OF BALANCING CONTRACTOR.
- b. INSTRUMENTATION LIST WITH LAST CALIBRATION DATES.

f. MOTOR AND FAN RPMS. SHEAVE SIZES AND BELT SIZES.

k. INDEXED PLAN WITH DIFFUSER AND RETURN LOCATIONS.

- c. MAKE AND MODEL NUMBERS OF ALL HVAC EQUIPMENT TESTED.
- d. AIR CFM AND STATIC PRESSURE READINGS (DISCHARGE AND SUCTION) AS MEASURED BY PITOT TUBE DUCT TRAVERSE AT THE UNIT.
- e. MOTOR NAMEPLATE DATA WITH ACTUAL FIELD VOLTAGE AND AMPERAGE READINGS FOR EACH LEG.
- g. OUTSIDE, RETURN, MIXED AND SUPPLY AIR TEMPERATURES AT FULL COOLING.
- h. WATER BALANCE DATA INCLUDING GPM WITH INLET AND OUTLET TEMPERATURE AND PRESSURE READINGS (WHERE APPLICABLE).
- MAKE AND MODEL NUMBERS OF ALL AIR DISTRIBUTION EQUIPMENT.
- j. FINAL BALANCED AIR VOLUMES AT ALL OUTLETS (INCLUDING RETURNS WHERE DUCTED).

I. MAXIMUM AND MINIMUM SET POINTS FOR DEMAND CONTROL VENTILATION SYSTEMS INCLUDING CFM, FAN SPEED, AND OUTDOOR AIR DAMPERS POSITION: 5. BALANCE ALL MEDIA QUANTITIES TO WITHIN 5% OF THAT INDICATED ON THE DRAWINGS WITH STORE IN OPERATING CONDITION (SALES/NON-SALES, OFFICE AND RESTROOM DOORS CLOSED). ANY REQUIRED CHANGES IN SHEAVES, BELTS OR PULLEYS NEEDED TO ACHIEVE SPECIFIED FLOW RATES SHALL BE PERFORMED BY THE HVAC CONTRACTOR WITH NO ADDITIONAL COST TO BBWI.

6. ALL CONTROL SEQUENCES SHALL BE TESTED (INTERLOCKED EQUIPMENT, SMOKE DETECTORS, SMOKE EVACUATION, ECONOMIZER, ETC.) AND OPERATING STATUS RECORDED IN THE BALANCE REPORT.

7. AIR BALANCING CONTRACTOR IS TO CONFIRM OVERRIDE OF MINIMUM OUTSIDE AIR INTAKE UPON CO2 MONITORING CONFIRMATION. FOR CO2 MONITORING CONTACT, SEE CONTACT INFORMATION ON SHEET M01.01.

8. THREE COPIES (ELECTRONIC COPIES ARE ACCEPTABLE) OF THE BALANCE REPORT SHALL BE SUBMITTED THROUGH THE GENERAL CONTRACTOR TO BBWI FOR APPROVAL. THE GENERAL CONTRACTOR SHALL VERIFY THE COMPLETENESS OF THE REPORTS PRIOR TO SUBMITTING TO BBWI. SUBMIT ONE COPY OF FINAL APPROVED AIR BALANCE REPORT TO MALL GENERAL MANAGER.

9. EQUIPMENT SUPPLIER SHALL BE RESPONSIBLE FOR ENSURING PROGRAMMING FOR ALL OUTDOOR AIR DAMPERS REFLECTS THE APPROVED CERTIFIED AIR BALANCE. CONTROLS VENDOR SHALL PROVIDE REMOTE SUPPORT AS NEEDED TO TAB CONTRACTOR TO ENSURE DAMPER SETPOINT. 10. THE BALANCING CONTRACTOR SHALL PERFORM ALL APPLICABLE TESTING AND BALANCING FUNCTIONS REQUIRED FOR THE SYSTEM DESIGNED ON THESE DRAWINGS. ALL SYSTEMS UNABLE TO BE COMPLETELY BALANCED AT THE TIME OF ORIGINAL BALANCE MUST BE BALANCED IN FUTURE AT NO ADDITIONAL

### SECTION 230700: HVAC INSULATION A. DUCTWORK INSULATION

4. FURNISH AND INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES. INSULATION MUST COMPLY WITH NFPA/NFPAC 90A.

EXPENSE TO BBWI THE BALANCING CONTRACTOR SHALL RECHECK ANY ITEMS THAT BBWI DEEMS NECESSARY AT NO ADDITIONAL COST TO BBWI.

5. ALL INSULATION SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING OF NO HIGHER THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84-05, OR AS REQUIRED BY LOCAL CODES.

6. DUCTWORK SHALL BE INSULATED ACCORDING TO THE ENERGY CODE ADOPTED BY LOCAL AHJ. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM CODE AND PROVIDE ADEQUATE INSULATION AS INDICATED BELOW (WITHIN ASSUMED PARAMETERS).THIS SPEC DOES NOT INCLUDE REQUIREMENTS FOR DUCTWORK LOCATED WITHIN A VENTILATED ATTIC OR OUTSIDE. IN SUCH INSTANCES, REFER DIRECTLY TO CODE ADOPTED BY LOCAL AHJ.

a. RECTANGULAR SUPPLY AND RETURN AIR DUCTS — <u>Plenum or ducted return</u> air system: duct sizes shown on drawings are inside clear DIMENSIONS. ALL RECTANGULAR DUCTWORK (SUPPLY AND RETURN) SHALL BE EXTERNALLY INSULATED TO THICKNESS LISTED BELOW. (1) ASHRAE 90.1-2007, 2010, 2013 & 2016 IECC-2009, 2012, 2015 & 2018 OREGON ENERGY CODE-2014. WASHINGTON STATE ENERGY

CODE-2015: PROVIDE 2" THICK, 1.0 LB/FT^3 (R=7.6, R=6.1 INSTALLED) DUCT WRAP WITH VAPOR BARRIER 4. ALL OUTDOOR AIR (ROUND, OVAL, AND RECTANGULAR) AND ROUND/OVAL SUPPLY AIR DUCTWORK SHALL BE EXTERNALLY INSULATED AS INDICATED:

a. <u>Plenum and ducted return air systems:</u> all outdoor air (round, oval, and rectangular) and round/oval supply air ductwork shall BE EXTERNALLY INSULATED WITH A DUCT WRAP WITH VAPOR BARRIER. REFER TO THICKNESS BELOW. VAPOR BARRIER IS TO BE MAINTAINED THROUGHOUT DUCT SYSTEM. ALL JOINTS MUST BE OVERLAPPED AND TUCKED SO THAT NO INSULATION FIBER IS VISIBLE (TAPING OR MASTIC IS REQUIRED. OVERLAP WITH WIRE IS NOT ACCEPTABLE). EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND OTHER PENETRATIONS.

(1) ASHRAE 90.1–2007, 2010, 2013. & 2016 INTERNATIONAL ENERGY CODE–2009, 2012, 2015. & 2018 OREGON ENERGY EFFICIENCY SPECIALTY CODE-2014: PROVIDE A MINIMUM OF 2" THICK, 1.0 LB/FT^3 (R=7.6, R=6.1 INSTALLED) DUCT WRAP WITH VAPOR BARRIER.

(a) SUPPLY AND RETURN AIR ROUND AND OVAL DUCTWORK INSULATION: ROUND/OVAL SUPPLY AND RETURN AIR DUCTWORK SHALL BE EXTERNALLY INSULATED WITH A MINIMUM OF 2" THICK DUCT WRAP, 1.0 LB/FT^3 (INSTALLED R-6.1).

(b) OUTSIDE AIR DUCTWORK INSULATION FOR UNITS SUPPLYING LESS THAN 2800 CFM: ALL OUTDOOR AIR (ROUND, OVAL, AND RECTANGULAR) DUCTWORK SHALL BE EXTERNALLY INSULATED WITH A MINIMUM OF 2-1/2" THICK DUCT WRAP, 0.75 LB/FT^3 (INSTALLED R-7.1).

### (c) (C) OUTSIDE AIR DUCTWORK INSULATION FOR UNITS SUPPLYING MORE THAN 2800 CFM: PROVIDE TWO LAYERS OF 2.5" THICK, 2.25 LB/FT^3, EXTERNAL BOARD INSULATION (CONDUCTIVITY 0.24 @ 75°F; R-20.8)

(2) 2015 WASHINGTON STATE ENERGY CODE:

1. INSULATE THE REFRIGERANT SUCTION LINES AND CONDENSATE LINES WITH 1 1/2" PIPE INSULATION SIMILAR TO FLEXTHERM SEAM—SEAL OR INSUL—LOCK. INSULATION SHALL BE A CLOSED CELL FIBER FREE ELASTOMERIC FOAM IN ACCORDANCE WITH ASTM C 534, TYPE I - TUBULAR, GRADE 1; SHALL HAVE A CONDUCTIVITY NOT TO EXCEED 0.26 BTUIN/HFT2°F AT 75°F WHEN TESTED IN ACCORDANCE WITH ASTM C 177 OR C 518; SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE DEVELOPED RATING OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84; AND SHALL HAVE A MAXIMUM WATER ABSORPTION % OF 0.2 BY VOLUME WHEN TESTED IN ACCORDANCE WITH ASTM C 209. DO NOT INSULATE THE HOT GAS (LIQUID) LINES OR ANY HOT GAS BYPASS.

## SECTION 230800: COMMISSIONING OF HVAC

HVAC CONTROLS COMMISSIONING.

A. DETAILED HVAC COMMISSIONING INFORMATION IS INCLUDED IN THE BBWI SITE MANUAL PROVIDED TO THE CONTRACTOR AT THE START OF THE PROJECT. B. EQUIPMENT SUPPLIER WILL CONTACT THE CONTRACTOR EARLY IN THE PROJECT TO SET PRELIMINARY DATES FOR HVAC INSPECTION, COMMISSIONING AND

WORK REQUIRED PRIOR TO HVAC INSPECTION / COMMISSIONING (TO BE COMPLETED BY MECHANICAL SUBCONTRACTOR) 1. CONNECT AND BLEED CONDENSATE, DUCTWORK, NATURAL GAS, CHILLED WATER PIPING, AND/OR CONDENSER WATER PIPING.

2. CHARGE HVAC SYSTEMS WITH REFRIGERANT FOLLOWING EQUIPMENT SUPPLIER GUIDELINES AND INSTRUCTIONS. COLD WEATHER CONDITIONS REQUIRE SPECIFIC

PROCESSES, CONTACT MANUFACTURER FOR TECHNICAL SUPPORT. 3. CONNECT POWER TO THE HVAC EQUIPMENT FOR A MINIMUM OF 24 HOURS.

a. IN COLD WEATHER SITUATIONS, DO NOT OPERATE THE UNITS PRIOR TO COMMISSIONING!

2. ALL DUCTWORK, ROOF OPENINGS AND CAPS, DIFFUSERS, FANS AND ACCESSORIES NECESSARY TO PROVIDE A COMPLETE TOILET EXHAUST SYSTEM SHALL BE D. HVAC EQUIPMENT SHOULD BE STARTED UP EARLY IN THE PROJECT. COORDINATE EARLY STAT UP OF EQUIPMENT WITH THE EQUIPMENT SUPPLIES THE GC MAY BE BACK CHARGED FOR ADDITIONAL AC SITE VISITS BEYOND THE FIRST THREE (3) NECESSARY TO DOCUMENT THE RESOLUTION OF THE HVA

PUNCHLIST ITEMS.

. <u>Prerough-in inspection</u> – to be completed by the commissioning agent, general, mechanical, and electrical contractors and include ti FOLLOWING PROCEDURE. DELAYS TO THE SCHEDULE LISTED BELOW SHALL NO BE CAUSE FOR ADDITIONAL COST TO OWNER.

a. GENERAL CONTRACTOR SHALL SCHEDULE COMMISSIONING AGENT AT LEAST TWO (2) WEEKS PRIOR TO SITE VISIT.

b. COMMISSIONING AGENT VISIT 1, SHALL BE COMPLETED PRIOR TO CEILING CLOSURE AND ROUGH-IN INSPECTION.

c. COMMISSIONING AGENT TO PROVIDE A PUNCH REPORT 48 HOURS AFTER COMPLETION OF VISIT. COMMISSIONING - TO BE COMPLETED BY THE GENERAL, MECHANICAL, AND ELECTRICAL CONTRACTORS AND INCLUDE THE FOLLOWING PROCEDURE. DELAYS

TO THE SCHEDULE LISTED BELOW SHALL NO BE CAUSE FOR ADDITIONAL COST TO OWNER. a. GENERAL CONTRACTOR SHALL SCHEDULE COMMISSIONING AGENT AT LEAST TWO (2) WEEKS PRIOR TO SITE VISIT.

b. T & B REPORT TO BE PROVIDED TO THE GENERAL CONTRACTOR, COMMISSIONING AGENT AND ENGINEER OF RECORD ONE(1) WEEK PRIOR TO

c. COMMISSIONING AGENT VISIT 2, SHALL HAPPEN ONCE ALL THE HVAC EQUIPMENT IS READY FOR STARTUP. MECHANICAL, GENERAL, AND ELECTRICAL CONTRACTOR SHALL BE PRESENT WHILE COMMISSIONING AGENT IS PRESENT FOR SUPPORT AS REQUIRED. d. COMMISSIONING AGENT TO PROVIDE A PUNCH REPORT 48 HOURS AFTER COMPLETION OF VISIT.

e. COMMISSIONING AGENT TO PROVIDE COMMISSIONING REPORT 48 HOURS AFTER VISIT #2.

### SECTION 230900: INSTRUMENTATION AND CONTROL FOR HYAC WORK RESPONSIBILITY

1. BBWI HVAC SUPPLIER WILL FURNISH NECESSARY CONTROL DEVICES TO THE FIELD. FOR ALL DEVICES NOT FACTORY INSTALLED, IT WILL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO INSTALL.

## Section 232300: Refrigerant Piping

A. REFRIGERANT PIPING:

. THIS CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE REFRIGERANT PIPING SYSTEM BETWEEN THE INDOOR FAN UNITS AND OUTDOOR CONDENSING UNITS. REFER TO PLANS TO DETERMINE IF A REFRIGERANT SYSTEM IS REQUIRED. NEW PIPING IS REQUIRED. REUSE OF EXISTING PIPING IS NOT ALLOWED.

a. REFRIGERANT PIPING SHALL BE TYPE ACR COPPER TUBING. TUBING SHALL BE CLEAN AND CLEAR OF DEBRIS, AND EVACUATED WITH A DEEP VACUUM PRIOR TO REFRIGERANT CHARGE. THE CONTRACTOR SHALL CONFIRM THE DIAMETER OF THE REFRIGERANT PIPING RUNS IN EXCESS OF 50 EQUIVALENT FEET WITH THE ARCHITECT, ENGINEER, AND MANUFACTURER FOR ALL SPLIT SYSTEMS. NO REFRIGERANT PIPING RUNS EXCEEDING 100 EQUIVALENT FEET ARE TO BE INSTALLED WITHOUT BBWI PM'S PERMISSION. THE MANUFACTURER SHALL PROVIDE ALL FINAL PIPE SIZING AND COIL SELECTIONS FOR ALL REFRIGERANT PIPING SYSTEMS.

o. ALL FITTINGS AND JOINTS SHALL BE WROUGHT COPPER OR CAST BRONZE (ANSI B 16.22). ALL COPPER TO COPPER JOINTS SHALL BE BRAZED WITH A COPPER-PHOSPHORUS ALLOY AND ALL OTHER JOINTS SHALL BE BRAZED WITH SILFOS-5 ALLOY. c. ALL ELBOWS ARE TO BE LONG RADIUS TYPE.

### 3. INSTALLATION

a. REFRIGERANT PIPE SIZING SHALL BE THE RESPONSIBILITY OF THE HVAC SUPPLIER. CONTRACTOR WILL PROVIDE A SCHEMATIC PROPOSED LAYOUT OF THE SYSTEM INCLUDING ALL ELBOWS, RISES, RUNS, ETC., WITH DIMENSIONS. THE HVAC SUPPLIER WILL THEN PROVIDE WRITTEN DOCUMENTATION OF PIPE SIZES AND ADDITIONAL REQUIRED SYSTEM COMPONENTS TO THE FIELD.

b. SUCTION LINES SHALL HAVE ADEQUATE LIFT TRAPS AND/OR DOUBLE SUCTION RISERS TO MEET THE REQUIREMENTS OF FIELD CONDITIONS AND EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

. BRAZE ALL JOINTS WITH SILFOS—5 STARTING AT THE INDOOR UNIT AND WORKING TOWARD THE OUTDOOR UNIT. THE SEALS ON THE OUTDOOR UNIT SHALL BE BROKEN LAST. A NITROGEN BLEED SHALL BE USED DURING ALL BRAZING AND ANY TIME THE SYSTEM IS OPEN. ALL OPEN LINES SHALL BE CAPPED AND SEALED BEFORE LEAVING THE SITE DURING CONSTRUCTION. PRESSURE TEST FOR LEAKS WITH AN INERT GAS UP TO 245 PSIG. REDO LEAKING JOINTS AND RETEST UNTIL SYSTEM IS TIGHT. EVACUATE ENTIRE SYSTEM TO 200 MICRONS OF MERCURY. CHARGE SYSTEM WITH 5 PSI OF R-410A AND AN INERT GAS TO 245 PSI AND RETEST SYSTEM. ENERGIZE CRANK CASE HEATERS 24 HOURS PRIOR TO STARTING COMPRESSOR TO ENSURE THAT ALL REFRIGERANT LIQUID IS OUT OF THE COMPRESSOR.

d. UPON COMPLETION OF TESTING, BUT BEFORE THE REFRIGERANT PIPING INSULATION IS APPLIED, THE PIPING MUST BE INSPECTED BY A REPRESENTATIVE OF THE LOCAL GOVERNING AUTHORITY AS NECESSARY.

e. INSULATE THE REFRIGERANT SUCTION LINES AND CONDENSATE LINES AS SPECIFIED HEREIN.

a. CONTRACTOR MUST PREPARE AND SUBMIT A COMPLETE PIPING SCHEMATIC TO THE LOCAL MANUFACTURER REPRESENTATIVE FOR APPROVAL PRIOR TO BEGINNING INSTALLATION. UPON COMPLETION OF PIPING, THIS CONTRACTOR MUST CALL THE LOCAL REPRESENTATIVE FOR FIELD INSPECTION OF WORK

PERFORMED. ALL ITEMS FOUND TO BE INADEQUATE FOR PROPER PERFORMANCE BY MANUFACTURER REPRESENTATIVE MUST BE CORRECTED. THIS

f. PROVIDE UL/ULC LISTED FIRE STOPPING SYSTEM AROUND ALL PIPING PENETRATIONS THROUGH RATED WALLS. PENETRATIONS SHALL MEET THE

## SECTION 233100: HVAC DUCTS AND CASINGS

INSPECTION IS PERFORMED AT BBWI EXPENSE.

A. METAL DUCTWORK 1. NO FIBERGLASS DUCT ALLOWED (RETURN AIR GRILLE BOOTS MAY BE DUCT BOARD WHERE ALLOWED BY LANDLORD).

REQUIREMENTS OF UL/ULC DETAILS WL1001 (UNINSULATED WALL) AND WL5039 (INSULATED WALL).

2. NO DUCTWORK SHALL BE FABRICATED PRIOR TO JOB SITE VISIT AND APPROVAL BY THE GENERAL CONTRACTOR. A SHOP DRAWING MUST BE SUBMITTED INDICATING CONSTRUCTION METHODS FROM DESIGN AND MUST BE APPROVED BY BBWI'S PROJECT MANAGER PRIOR TO FABRICATION OR INSTALLATION. 3. EXCEPT AS OTHERWISE INDICATED, FABRICATE AND INSTALL RECTANGULAR AND ROUND DUCTWORK WITH GALVANIZED STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" OF THE LATEST EDITION. WHERE OTHER CODES ARE ENFORCED, (1E. UMC, BOCA, ETC.) USE THE MOST STRINGENT CODE FOR DUCT CONSTRUCTION STANDARDS.

4. EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT DUCT SYSTEMS TO THE FOLLOWING PRESSURE CLASSIFICATIONS:

a. SUPPLY DUCTS: 2" W.G., POSITIVE b. RETURN AND EXHAUST DUCTS: 2" W.G., NEGATIVE

d. RETURN AND EXHAUST DUCTS: CLASS C - 2" W.G.

PRIOR TO FABRICATION OR INSTALLATION.

EXCEPT WHERE OTHERWISE INDICATED, USE DUCT SEALANTS OF THE FOLLOWING PRESSURE CLASSIFICATIONS: c. SUPPLY DUCTS: CLASS B - 3" W.G.

IN ACCORDANCE WITH THESE CONSTRUCTION AND SEALANT PRESSURE CLASSIFICATIONS, MAXIMUM DUCT AIR LEAKAGE WILL NOT EXCEED 5% AS REQUIRED FOR FINAL AIR BALANCE APPROVAL. 5. ROUND DUCTWORK SHALL BE GALVANIZED STEEL WITH SPIRAL LOCKSEAM CONSTRUCTION FOR ALL SIZES 14" DIAMETER AND LARGER. ROUND DUCTWORK

SIZES 13" DIAMETER AND SMALLER MAY BE SNAP-LOCK CONSTRUCTION. ALL SNAP-LOCK SEAMS SHALL BE SEALED AS DESCRIBED IN THESE SPECIFICATIONS. ROUND FITTINGS SHALL BE GALVANIZED STEEL WITH SPOT WELDED AND BONDED CONSTRUCTION. 6. ROUND SPIRAL GALVANIZED STEEL DUCTWORK MAY BE USED IN PLACE OF RECTANGULAR DUCTWORK IN HORIZONTAL APPLICATION WHEN ABOVE CEILING CLEARANCES PERMITS AND EQUIVALENT FREE AREA IS MAINTAINED, WITH THE FOLLOWING EXCEPTION; ONCE A TRANSITION IN THE DIRECTION OF THE AIRFLOW TO SPIRAL HAS BEEN DONE, DUCT WILL NOT BE ALLOWED TO REVERT TO RECTANGULAR. WHERE ROUND DUCT SUBSTITUTION WILL TAKE PLACE, SUBMIT A SKETCH AND CHART SHOWING EQUIVALENT ROUND CONVERSIONS OF RECTANGULAR DUCTWORK TO BBWI PROJECT MANAGER'S FOR APPROVAL

7. INSTALL FACTORY MANUFACTURED DOUBLE THICKNESS TURNING VANES IN RIGHT ANGLE ELBOWS IN MAIN DUCT PER LATEST EDITION OF SMACNA. 8. INSTALL RIGID ROUND AND RECTANGULAR METAL DUCT WITH SUPPORT SYSTEMS INDICATED IN SMACNA STANDARDS. SUPPORT HORIZONTAL DUCTS WITHIN 2 FEET OF EACH ELBOW AND WITHIN 4 FEET OF EACH BRANCH INTERSECTION USING DOUBLE STRAP HANGERS ON EACH SIDE OF FITTING. SUPPORT VERTICAL DUCTS AT A MAXIMUM INTERVAL OF 16 FEET AND AT EACH FLOOR. NO WOOD SHALL BE USED TO SUPPORT OR BRACE DUCTS. PROVIDE SWAY

AND SEISMIC BRACING AS REQUIRED BY STATE/PROVINCE AND LOCAL CODES OR BY LANDLORD. 9. WHERE DUCTS PASS THROUGH ROOFS AND FLOORS, PROVIDE AS MINIMUM 1-1/2"X1-1/2"X1/8" STEEL ANGLE FRAMES AT EACH SIDE OF OPENING. THI ANNULAR SPACE BETWEEN DUCT AND ANGLE FRAMES SHALL BE CAULKED WITH SILICONE SEALANT OR FIREPROOFED AS REQUIRED BY ASSEMBLY FIRE

10. ALL JOINTS AND SEAMS SHALL BE SEALED WITH 2" WIDE. GLASS-FIBER-FABRIC REINFORCED TAPE. JOINTS ALSO SHALL BE RIVETED OR CONNECTED WITH SHEET METAL SCREWS. LIQUID SEALANTS BY UNITED MCGILL CORP., DOW CORNING, MIRACLE ADHESIVES AND SUREBOND INC. WILL BE ACCEPTED I

11. SOFT ELASTOMER BUTYL GASKET WITH ADHESIVE BACKING SHALL BE USED TO SEAL FLANGED JOINTS.

12. DUCT TRANSITIONS SHALL NOT EXCEED 30 DEGREES SLOPE EXCEPT AS SPECIFICALLY NOTED OTHERWISE 13. PROVIDE ACCESS TO ALL MOTORIZED DAMPERS, FIRE DAMPERS, CONTROLS, AND OTHER ITEMS IN DUCTWORK THAT REQUIRE SERVICE OR INSPECTION. II THE ACCESS PANEL LOCATION IS EXPOSED TO THE SALES AREA, IT MUST BE APPROVED BY BBWI'S PROJECT MANAGER PRIOR TO INSTALLATION. IN HARD CEILINGS. LAY-IN SUPPLY AND RETURN AIR DIFFUSERS. GRILLES AND REGISTERS WITH PLASTER FRAMES MAY BE USED AS ACCESS LOCATIONS WHEN

WITHIN 3'-0" OF DEVICE. 14. ALL DUCTWORK SHALL BE INSTALLED WITH INSIDE CLEAR DIMENSIONS AS NOTED ON DRAWINGS. WHERE DUCTWORK SIZE IS LARGER THAN CONNECTED

DEVICE (IE. VAV BOX, DIFFUSER, REGISTER) SMOOTH DUCT TRANSITIONS ARE TO TAKE PLACE JUST PRIOR TO DEVICE CONNECTION. SEE MECHANICAL

## SECTION 233300: AIR DUCT ACCESSORIES

MOVEMENT AND PREVENT THE TRANSMISSION OF VIBRATION.

DRAWINGS FOR DETAIL.

A. FLEXIBLE CONNECTIONS

LATEST EDITION.

15. FLEXIBLE COLLARS SHALL BE FURNISHED AND INSTALLED IN ALL CONNECTIONS BETWEEN VIBRATING EQUIPMENT (FANS. AIR HANDLERS. ETC.) AND DUCTS OR CASINGS. ALSO, FURNISH AND INSTALL FLEXIBLE CONNECTIONS WHERE DUCTS CROSS BUILDING EXPANSION JOINTS. 16. FLEXIBLE CONNECTIONS SHALL BE CONSTRUCTED OF NEOPRENE-COATED FLAMEPROOF FABRIC. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR

1. FLEXIBLE AIR DUCT SHALL BE 1" INSULATED CLASS 1, UL/ULC LISTED AND RATED FOR THE OPERATING PRESSURE OF THE SYSTEM. DUCT CONSTRUCTION MATERIAL (PLASTIC, CLOTH, ALUMINUM) MUST ADHERE TO LOCAL CODES AND LANDLORD'S REQUIREMENTS AND BE INCLUDED AS SUCH IN THE BID.

2. FLEXIBLE AIR DUCT SHALL BE ATTACHED PER DETAILS ON THE DRAWINGS. FLEXIBLE AIR DUCT MAY ONLY BE USED IN VERTICAL APPLICATIONS.

LANDLORD REQUIREMENTS. C. SUPPLY AIR TAKE-OFF FITTINGS 1. FURNISH AND INSTALL CONICAL. TAPERED OR 45 DEGREE SADDLE TAKEOFFS PER DETAIL "B" ON SHEET MO3.01. INSTALLATION SHALL BE PER SMACNA

3. FLEXIBLE DUCT SHALL NOT EXTEND OVER 5'-0" IN LENGTH AT ANY ONE LOCATION. WHERE LANDLORD HAS SHORTER LENGTH RESTRICTIONS, COMPLY WITH

1. WHERE DESIGNATED. FURNISH AND INSTALL ROUND BALANCING DAMPERS. PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES WITH MINIMUM 3/8" SQUARE STEEL AXLE, AND MOLDED SYNTHETIC BEARINGS (EQUIVALENT TO RUSKIN MODEL MDRS25) WITH MANUAL LOCKING POSITION REGULATOR WITH STANDOFF (EQUIVALENT TO DURO DYNE MODEL KR).

2. WHERE DESIGNATED, FURNISH AND INSTALL RECTANGULAR VOLUME DAMPERS. PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE

3. OPERATING HANDLES ON ALL DAMPERS SHALL BE TAGGED WITH A MINIMUM 18" LONG ORANGE MARKER TAPE AND SHALL BE INSTALLED FAR ENOUGH AWAY FROM DUCT TO ENSURE IT FULLY AND COMFORTABLY CLEARS THE INSULATION WHEN TURNED.

4.WHERE ACCESS TO BALANCING DAMPER IS RESTRICTED, A REMOTE DEVICE, MANUALLY OPERATED SHALL BE USED. UNITS SHALL BE ORDERED THREE WEEKS BEFORE INSTALLATION TO ALLOW FOR DELIVERY LEAD TIME.

PROVIDE DIFFUSERS GRILLES AND REGISTERS AS SCHEDULED. DEVICES TO BE COMPLETE WITH DAMPERS FRAMES AND ALL ACCESSORIES. FINISH AS

2. INSTALL ALL AIR DEVICES AS LOCATED ON THE ARCHITECTURAL REFLECTED CEILING PLAN.

REMOVED HATCHING AND UNUSED SECTIONS

3. APPROVED MANUFACTURERS: TITUS IS SPECIFIED, NO APPROVED EQUALS

City of Puyallup **Development & Permitting Services** ISSUED PERMIT Planning **Public Works** Traffic

Thorson•Baker + Associate CONSULTING ENGINEER 3030 West Streetsboro Road Richfield, Ohio 44286 (330) 659-6675 F



REVISIONS: REQUIRED BY: / Z \ REV 2 - BD COMMENTS

12/19/202 DATE ISSUED: DESIGNED BY: DRAWN BY: CHECKED BY:

MECHANICAL SPECIFICATIONS

DRAWING NUMBER:

GALVANIZED STEEL BLADES, MINIMUM 1/2" HEXAGONAL AXLE, MOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT (EQUIVALENT TO RUSKIN MODEL CD35). MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6". LINKAGES SHALL BE CONCEALED IN THE FRAME. CONTROL SHAFT SHALL EXTEND BEYOND FRAME AND DUCT COVERING TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER (EQUIVALENT TO DURO DYNE MODEL K-4) WITH

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MECHANICAL SPECIFICATIONS

City of Postering City of City of Postering City of Ci	
Building	Planning
Engineering	Public Work
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MECHANICA	AL COMPLIA	NCE SU	UMMARY													
2018 WSEC Compliance	e Forms for Commercia	al Buildings in	cluding Group R2	2, R3 & R4	over 3 stories	and all R1	1						Administered by	/: ©2022 N	JEEA, All rights reserv	
<u> </u>		Project Ti	tle	Bath	& Body Work	s South H	Iill Remote Sto	orage - 20	18 WSE	EC	For Building De	epartment L	Jse:	Date	: Dec 15, 202	
Project & Applicant		Project Ac	ddress									Date	. Dec 13, 202			
Information		Applicant	Name				p, WA 98373 Beardsley									
		Applicant		·												
		Applicant			СВе		thorsonbaker.	.com								
	F		bout this report, c	ontact WSI					300 or v	ia email at c	com.techsupport@	<i>a</i> waenergy	codes.com			
General Occupancy			1 Commercial	Gene	ral Building U	se Tyne		Warel	house G	eneral Stora	ge	Ruilding	Cond. Floor Area		527	
general occupancy			New Building	Gene	ar Bananig C	se Type		· · · · · ·	nouse, G	eneral Stora	<u>.gc</u>		Cond. Floor Area		527	
General Project Types		Alteration	or Addition	ļ			Alteration		Single	Zone System	ms & Equipment		bove Grade		0	
, pes			Mechanical Sco	pe			Mechanica	d Scope				-	nce Method	Compli	ance Method 1 - Genera	
Mechanical Project De	scription						Sma	all split sy	stem to	cool the rem	note storage					
·		<u></u>			<u> </u>					<u>-</u>						
Mechanical Compliance Scope and Method			Project Type		Mechanical Scope		Economizer Exception(s) Applied?		D	OAS Ventil: Provided			igher Equipment ency Option Applied	!?	Equipment Efficience Compliance Verification	
50	Scope and Method				Zone Systems Equipment	s &	Yes			No			NA		COMPLIES	
Additional Efficiency Credits Included (AEC	()							-			·					
Does building include of DOAS?	Ooes building include occupancy classifications requiring OOAS?				No Does project include DOAS equipment?										No	
Based on project scope	do TSPR requiremen	ts apply?		No Do all systems comply with Appendix D standard re TSPR?							tandard referen	ce design o	r qualify for an exc	eption to	No	
Scope & Space Cor	ditioning	ALTED	ATION - SINC	TIF 70N	IE CVCTEN	AS & F	OHIDMEN	J <b>T</b>					Compliance Ver	rification	COMPLIES	
scope & Space Cor	luttoning	ALIEN	ATION - SINC	JLE ZON	E SISIEN	15 & E	QUII MEN	11					Comphance ver	meation	COMPLIES	
Single Zone Air System	s Category - Air hand	ling unit, hyd	ronic													
Air Systems Summary System/Equip ID	Supply Airflow		Ventilatio	n Standard	<u> </u>		ntilation	Ventilat		Paired w	vith DOAS	Venti	lation energy recov	erv	Energy Recovery Efficiency (%)	
AHU.CU-	AHU,CU-1 Constant volume		Inoccupied, no ver	ntilation rec	wirement		<b>CFM</b> 600	Air Sou Integra	_			Not	provided, not require	ed l	Efficiency (%)	
71110,00	- Constant voidine						500	egi				1,00	r			
Air Systems & Equipm	ent - Cooling															
Equip ID		Specific Type	per item (bi		C Efficiency Iultiplier		Exception er (FL & PL)			Efficiency EC & Econo	Proposed C Efficien	cy U	EE Proposed Par nits Load Efficience	y Units	Efficiency Compliand Verification	
AHU,CU-1 Air cond	ditioner, air cooled S	plit system D	X 19,000		1		0		1		17.0	SE	ER	IEER	COMPLIES	
Air Systems & Equipm	ent Details															
System/Equip ID	Area(s) Serve	ed			Location In P	roject De	ocuments - Pl	lan/Detail	I #							
	Remote Storag						02.01									
AHU,CU-1	Kemote Storas											Economizer Compliance Method: Economizer not required				
AHU,CU-1	Heating Section/Auxilia		pe: Electric resista	nce (or No	ne)						Eco	nomizer Co	ompliance Method: E	conomize	not required	

Mechai	ical Red	uirements Li	st, pg 1 of 25		Mecha	nical Requ	uirements Lis	st, pg 2 of 25	Mechanical Requirements List, pg 3 of 25				Mecha	nical Requ	uirements Lis	st, pg 4 of 25	
The following Washington S	formation is ne te Energy Cod	essary to check a mechar e, Commercial Provisions.	uding Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2 sical permit application for compliance with the mechanical systems and al Technical Support at 360-539-5300 or via email at com.techsupport@	equipment requirements in the	The following Washington S	information is necess State Energy Code, (	ssary to check a mechan Commercial Provisions.	ading Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights rical permit application for compliance with the mechanical systems and equipment requiremental Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com	ts in the The following Washington	2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions. For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com				2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions.  For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com			
3500 S. I Space 23	Bath & Body Works South Hill Remote Storage - 2018 WSEC 3500 S. Meridian Street Space 235 Puyallup, WA 98373  Date: 2022-12-1		Date: 2022-12-15	YES	C403.3.1	Equipment and system sizing	Indicate that output capacities of heating and cooling equipment and systems are no greater than the smallest available equipment size that exceeds the calculated loads; note exceptions applied	NA		Dedicated outdoor a systems	For buildings with occupancies required to comply with the DOAS provisions per Table C403.3.5, identify on plans all occupancies in the building and indicate which occupied spaces are required to have ventilation air	NA	C403.3.5.2		with the delivery of zone level heating and cooling (fans, hydronic pumps, primary air dampers, etc) are configured to shut off, and central equipment is configured to turn down,		
Applies SCOPE NA	Code Sec	Construction	Compliance Information Required In Permit Documentation  Location in Documents  For a shell & core or tenant space (first build-	Building Department Notes	YES	C403.3.2 C403.9.1	HVAC equipment performance requirements (efficiency)	Provide equipment schedules on plans and in WSEC mechanical equipment compliance reports; indicate equipment type, calculated loads, capacity, rated and WSEC minimum efficiencies for all heating and cooling equipment; include supply and ventilation air	NA			delivered by a DOAS; or exception applied  If natural ventilation exception is applied, identify these spaces on plans; indicate operable window area complies with IMC Section 402; provide documentation describing how required ventilation will be	NA			when there is no call for heating or cooling in the zone they serve  If applying Exception to heating / cooling fans used for air mixing in the space during deadband periods, include fan watts per cfm in equipment schedule	
YES	C103.1	Construction	out) project, indicate if there is no mechanical scope included in the project.  For an alteration project, indicate if there is no mechanical scope included in the project.					cfms and operating hours for all air systems; identify heating and cooling equipment that does not have a corresponding WSEC minimum efficiency (manufacturer rated)	NA			provided during all occupied hours, including during inclement weather  If high efficiency VAV exception is applied, identify these spaces on plans; refer to Single	NA	C403.3.5.3	Decoupled DOAS supply air	Indicate method of delivery of DOAS supply air to the occupied space (directly into space, downstream of terminal heating / cooling coils); or exception applied	
PERFORM YES	C403.1	Exempt process equipment	Identify equipment used by manufacturing, industrial or commercial processes that are not for space conditioning or maintaining		YES	C405.8	Electric motor efficiency	List all motors ≥ 1/12 hp (that are not integral to a rated piece of equipment) in the mechanical or electrical equipment schedules on plans; indicate motor type and applicable efficiency table, hp, rpm, number of poles and				Zone VAV section for Groups A-1, A-2 and A-3 occupancy classifications, or Multiple Zone VAV for other than Groups A-1, A-2 and A-3 (per Table C403.3.5)		C403.6.1	Multiple zone DOAS	For DOAS serving multiple zones, indicate controls configured to reduce the volume of outdoor air in each zone independently when the zone is unoccupied; or exception applied	
			comfort and amentities for occupants; identify provisions applicable to this equipment per C403.1 exception		NO	C403.3.2	Gas and oil-fired forced air furnace	rated efficiency, or exception applied  For forced air furnaces with capacity ≥ 225,000 Btu/h and all unit heaters, indicate in	NA			If compliance with the DOAS provisions is deemed to be impractical, provide documentation that demonstrates the alternate design strategy applied that achieves a	<b>ADDITION</b> NA		DOAS	TED OUTSIDE AIR SYSTEMS (DOAS)  For building occupancies not subject to the requirements of Section C403.3.5, to comply	
NA	C403.1.1	· ·	For systems serving office, retail, library or education occupancies, provide a TSPR report that demonstrates the proposed design ratio is equal to or greater than the standard reference				and unit heaters	equipment schedule intermittent ignition or IID, flue or draft damper, and rated jacket loss	NA			comparable level of energy efficiency, as pre- approved by the AHJ  Refer to Requirements List section after				with this additional efficiency credit, provide calculations that demonstrate 90% or more of the total floor area of all occupied, conditioned spaces are served by a DOAS per	
YES	C403.1.2	Calculation of heati	design ratio, or exception applied  Provide load calculations performed per ASHRAE Std 183 or equivalent, using design		NO	C403.3.2.4	Packaged electric heating / cooling equipment	Verify all packaged electric equipment with > 6,000 Btu/h cooling capacity and any amount of heating is a heat pump; include in equipment schedules	NT A			Multiple-Zone Air Systems for High Efficiency Multiple-Zone VAV Systems exception to C403.3.5 DOAS	NA	C406.7		C403.3.5  For all building occupancies, to comply with this additional efficiency credit, demonstrate	
			parameters per C302 and Appendix C; include load adjustments to account for energy recovery		NO	C403.3.3	Hot gas bypass limitation for DX cooling equipment	For cooling equipment with hot gas bypass, provide either multiple step unloading or continuous capacity modulation; indicate	NA NA			Refer to Requirements List section after High Efficiency Multiple-Zone Air Systems for High Efficiency Single-Zone VAV Systems exception to C403.3.5 DOAS	NA	A	recovery effectiveness and fan	compliance with C406.6	
YES	C403.1.3	Data centers	Provide documentation that demonstrates that data center systems comply with the maximum allowed Design MLC and Annualized MLC per ASHRAE 90.4 with		NO	C403.3.2.5	Humidification	bypass capacity per Table C403.3.3  For cooling systems with humidification equipment that are also required to have air	NA	C403.3.5	DOAS energy recovery method an effectiveness	For all DOAS systems, indicate exhaust air ER method and basis of rated effectiveness (sensible or latent); indicate ≥ 60% sensible or				For each system, indicate that total system fan power does not exceed 0.5 watts per cfm	
NO	C403.2.1 C403.4.2.	Zone isolation	2018 WSEC adjustments per climate zone  If there are HVAC zones that are intended to be occupied non-simultaneously, identify isolation zone areas on plans; if multiple zones		NA	C403.3.2	Hydronic equipment	economizer, indicate humidifier is adiabatic (direct evaporative or fog atomization), or exception applied  Refer to Requirements List section Hydronic				≥ 50% enthalpy ER effectiveness based on delta between outdoor air and return air enthalpies at design conditions; or exception applied		C403.8.1		For all HVAC fan systems that provide heating and / or cooling and all DOAS, provide system total nameplate hp in	
			intended to be occupied simultanteously will be combined into a single isolation zone, include on plans that the combined zone area does not exceed 25,000 sf and does not		170	8		Systems - Equipment Selection & Performance for selection criteria specific to chillers and boilers	NA			50% when occupancy is less than design occupancy  For DOAS with total system fan hp < 5 hp, indicate total system fan power does not	NO			equipment schedules on project plans  For all applicable HVAC systems with total fan motor nameplate hp > 5hp, verify fan	
NO			include more than one floor; or exception applied  Indicate locations of associated zone isolation		NO	C403.9	Heat rejection equipment	Refer to Requirements List section Heat Rejection Systems - Equipment Selection & Performance for selection criteria specific to cooling towers, dry coolers and condensers (air-cooled and evaporative)	NA	C403.3.5	DOAS fan power		YES			system motor hp or bhp complies with fan power limits per equations in Table C403.8.1(1)  Terminal units installed in conjunction with a	
YES			dampers in HVAC distribution system  Refer to HVAC Controls section in Requirements List for applicable automatic setback and shutdown controls requirements		EQUIPMENT SELECT		EQUIPMENT SELECTION & PERFORMANCE - DEDICATED OUTSIDE AIR SYSTEMS (DOAS)					exceed 1 watt per cfm  For DOAS with total system fan hp $\geq$ 5 hp, indicate total system fan power complies with fan power limitation per Section C403.8.1				DOAS (hydroninc heat pumps, VRF heat pumps, chilled/hot water terminal units, variable volume terminal units) shall be treated as independent air-handling units for purposes of fan power calculations	

Thorson • Baker + Associates
CONSULTING ENGINEERS 3030 West Streetsboro Road (330) 659-6688 Ph. Richfield, Ohio 44286 (330) 659-6675 Fax



	REVISIONS:	
$\wedge$	REQUIRED BY:	
<u> </u>	REV 1 - BD COMMENTS	05/10
2	REV 2 - BD COMMENTS	06/09

DATE ISSUED:
DESIGNED BY:
DRAWN BY:
CHECKED BY: 12/19/2022

**WSEC** 

REQUIREMENTS

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**WSEC** REQUIREMENTS

Mechanical Requirements List, pg 5 of 25	Mechanical Requirements List, pg 6 of 25	Mechanical Requirements List, pg 7 of 25	Mechanical Requirements List, pg 8 of 25  2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions.  For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com			
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NO  C403.8.2  Motor nameplate hp For all applicable HVAC systems with total fan motor nameplate hp > 5hp, indicate fan motors specified are the smallest available motor hp size greater than fan bhp, note exceptions applied  YES  C405.8  Fractional hp fan For all fractional hp fan motors (1/12 - 1 hp),	YES  For other mechanical cooling systems (includes DX and chilled water coils) that control space temperature by modulating airflow (in lieu of, or in addition to, controlling capacity in response to space temperature) - Provide fan controls for modulating supply airflow; indicate minimum	NA  If mechanically delivered, indicate that ventilation systems are configured to provide not more than 150% of, but at least the minimum required volume of outdoor air to each zone per IMC, ASHRAE 62.1 or other applicable code (WAC, OSHA, etc); or exception applied	NA  C403.7.4.2  Ventilation controls for Group R-1 guestrooms  Refer to Requirements List section HVAC Controls for Group R-1 temperature setback and set-up controls  Indicate method of ventilation and exhaust isolation for each guest room and automatic controls that are configured to turn off			
motors indicate that motors comply with applicable WSEC efficiency tables; if motor type is not listed in an efficiency table, indicate whether fan has an electronically commutated motor, has motor rated efficiency of at least 70%, or	fan speed is $\leq 50\%$ of full speed drawing $\leq$ 30% of full speed fan power during periods of low cooling or ventilation only; or exception applied	NA  If delivered via natural ventilation, identify required elements per IMC including: minimum openable area to the outdoors or qualifying adjoining spaces; criteria for	ventilation and exhaust airflow when each room is unoccupied  NA  C403.8.4  Group R occupancy exhaust fan efficacy exhaust fan efficacy  Fan Controls			
NO C403.8.3 Fan efficiency For individual fans > 5hp, and multiple fans	ADDITIONAL EFFICIENCY PACKAGE OPTION, MORE EFFICIENT HVAC EQUIPMENT & FAN PERFORMANCE - MUST COMPLY WITH ALL 3 PROVISIONS TO BE ELIGIBLE	ensuring required ventilation is provided during all occupied hours of the year	NA C403.7.5 Enclosed loading C403.7.5.1 Enclosed loading docks, indicate ventilation ventilation ventilation ventilation			
combined in series or parallel that operate as the functional equivalent of a single fan with a combined total motor hp > 5hp, indicate in equipment schedule that rated FEG for all	NA C406.2.1 HVAC system selection To comply with this additional efficiency credit, provide calculations that demonstrate (based on heating and cooling output capacity) that 90% or more of all HVAC equipment	(including during inclement outdoor conditions)  NA  C403.2.2.2 Exhaust  Indicate that exhaust systems are configured to provide not more than 150% of, but at least	activation (gas detection system for CO and NO2, or occupancy sensors), and control method (staged or modulating)			
applicable fans is $\geq 67$ , or exception applied; indicate these fans are sized so total efficiency is within 15% of the fan maximum total efficiency	serving conditioned floor areas have a corresponding WSEC listed efficiency; or exception applied	the minimum required volume from each zone per IMC, or other applicable code (WAC, OSHA, etc); or exception applied	NA C403.7.5 Enclosed parking garages, indicate ventilation for enclosed parking garages, indicate ventilation / exhaust system activated by gas detection system for CO and NO2, and control method (staged or modulating); or			
NA C403.8.4 Group R occupancy exhaust fan efficacy occupancies, indicate in equipment schedule the fan flow rate and efficacy (cfm/watt), or	NA C406.2.2 Minimum equipment efficiency In addition to system selection requirement, indicate that all associated heating and cooling equipment have a rated efficiency for all equipment performance criteria (heating,	NA C403.4.2.4 Exhaust system off-hour controls Refer to Requirements List section HVAC Controls for off-hour controls requirements for exhaust systems  NA C403.3.6 Balanced ventilation For Group R-2 dwelling and sleeping units,	NA C403.7.6 Ventilation / exhaust systems energy recovery ventilation air exceeding the values in Tables			
exception applied; refer to Table C403.8.4  NO  C403.2.3  Variable flow capacity - fans  variable flow control (VSD or equivalent	cooling, full load, part load) that is at least 15% better than the listed WSEC efficiency; include specific equipment exceptions applied	for Group R-2 indicate that each habitable space is provided occupancy with a balanced ventilation system; indicate system is provided with energy recovery with	C403.7.6(1) or (2), indicate exhaust air energy recovery method; or exception applied with supporting calculations			
method) in equipment schedule, or exception applied  NO C403.8.5.1 Fan airflow control For DX air handling units with cooling	NA  For systems required to provide a TSPR report per C403.1.1, demonstrate that the proposed design ratio is at minimum 10% higher than the standard reference design ratio	NA C403.7.1 Demand controlled ventilation C403.7.1 Demand c403.7.1 Demand c503.7.1 Demand c503.7	NA  For rooms served by multiple systems with aggegate design ventilation air > 5,000 cfm, or aggregate design supply air cfm and % ventilation air exceeding the values in Tables			
capacity ≥ 42,000 Btu/h and evaporative and chilled water air handling units with fan ≥ 0.25 hp, indicate whether system is single zone or multiple zone and related control	NA  For projects complying via weighted average efficiency exception, include calculations that demonstrate the overall average better than	system with total design ventilation air > 3,000 cfm, and / or the system has airside economizer or automatic modulating outdoor air damper; indicate controls are configured to	C403.7.6(1) or (2), indicate exhaust air energy recovery method; or exception applied with supporting calculations			
method (cooling capacity controlled in response to space temperature, space temperature is controlled by modulating supply airflow, or both)	code efficiency of all equipment performance criteria for all equipment is ≥ 15%; indicate that all equipment has at least 5% better than code efficiency	provide demand controlled ventilation or provide supporting documentation for applied exception	NA Indicate energy recovery rated effectiveness that increases outdoor air enthalpy by $\geq 50\%$ based on delta between outdoor air and return air enthalpies at design conditions			
YES  For mechanical cooling systems (includes DX and chilled water coils) that control cooling capacity in response to space temperature -	NA  For systems serving low energy and semi- heated spaces, indicate that 90% or more of installed heating output capacity is provided	NA C403.7.2 Occupancy sensors For gyms, classrooms, auditoriums, conference rooms and other spaces with occupant load ≥ 25 people/1,000 sf per IMC,	NA C403.7.7.1.1 Kitchen exhaust hood C403.7.7.1.2 System Indicate on plans the type, duty, UL rating and exhaust airflow rate of each kitchen hood			
Provide a minimum of two stages of fan control; indicate minimum fan speed is ≤ 66% of full speed drawing ≤ 40% of full speed fan power during periods of low cooling	by electric infrared or gas-fired radiant equipment for localized heating applications only	that have an area > 500 sf, indicate occupancy- based ventilation air control when space is unoccupied and method (closes outdoor air damper or shuts-off equipment); or alternate	NA  Provide calculations that show a balanced accounting of total kitchen exhaust (include all hoods) with % of: supply air, transfer air from adjacent spaces, and make-up air			
or ventilation only	NA C406.2.3 Minimum fan efficiency grade In addition to system selection and efficiency requirements, indicate rated FEG of all $\geq 1$ hp (750 watt) stand alone supply, return and exhaust fans is $\geq 71$ ; indicate these fans are	means provided to automatically reduce ventilation air when space is partially occupied; or exception applied	NA  For hoods with make-up air drawn directly into the exhaust air cavity of each hood, indicate that replacement air does not exceed			
	sized so the fan efficiency at design conditions is within 10% of the maximum total or static efficiency	NA C403.7.3 Ventilation air heating control For ventilation air systems that operate in conjunction with heating and cooling systems, indicate that ventilation air is tempered (via heating or heat recovery) to no greater than	NA  For kitchens with total hood exhaust exceeding 2,000 cfm, indicate that each hood			
	VENTILATION, EXHAUST & ENERGY RECOVERY  NA  C403.2.2.1 Ventilation  Indicate method of ventilation air delivery (natural or mechanical) for each zone	60F when the space conditioning system is in cooling mode	is UL 710 rated and maximum exhaust airflow rate of each hood is per Table C403.7.7.1.2; or exception applied			

Mecha	nical Requ	irements Li	st, pg 9 of 25		Mechar	nical Require	ements Lis	st, pg 10 of 25	Mech	anical Requ	uirements Lis	t, pg 11 of 25	Mech	Mechanical Requirements List, pg 12 of 25			
The following Washington	information is neces State Energy Code, C	ssary to check a mechan Commercial Provisions.	ding Group R2, R3 & R4 over 3 stories & all R1 Administere cal permit application for compliance with the mechanical syste al Technical Support at 360-539-5300 or via email at com.techs	ems and equipment requirements in the	The following in Washington St	nformation is necessary ate Energy Code, Comr	to check a mechani mercial Provisions.	ding Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved cal permit application for compliance with the mechanical systems and equipment requirements in the all Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com	2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions.  For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com				the The following Washington	2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions.  For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com			
NA NA	C403.7.7.2	Laboratory exhaust systems energy recovery	cfm, indicate method of energy recovery used to pre-condition laboratory make-up air;		HVAC CON YES	C403.4.1	Thermostatic controls thermostats and numidistats)	Indicate locations of thermostatic and humidity control devices and the zones they serve on plans, including perimeter system zones  Where adjacent (neighboring) zones are controlled by separate thermostats (including perimeter systems used to offset heat gain or loss), and are connected by permanent	YES	C403.4.1.6	HVAC system thermostatic control	Where doors open to the outdoors from a conditioned space, indicate automatic controls configured to setback the HVAC system(s) when the door is open for > 5 minutes; indicate method of HVAC system setback control (turns off the HVAC system or resets the heating setpoint to 55°F and cooling setpoint to 85°F), or exception applied  Indicate zone thermostatic controls configured	NA	C403.7.4.1		For hotels / motels with over 50 guest rooms, indicate automatic controls for HVAC equipment serving guest rooms are configured to setback (heating) and set-up (cooling) temperature setpoint by at least 4°F when room is unoccupied, and adjust setpint to 60°F (heating) and 80°F (cooling) when room is unrented / vacated; indicate control method - activated by room entry, occupancy sensor or networked guestroom control system	
			energy recovery effectiveness (min 25°F increase in outside air temperature); or alternative method per exception (VAV exhaust, semi-conditioned makeup, or CERM calculation)					openings > 10% of either zone sf area, indicate controls configured to prevent adjacent zones from operating in conflicting modes (one in heat, other in cool); applies to		C403.4.2.1 C403.4.2.2	and shutdown	with required automatic setback and manual override functions, setback temperatures, and control method (automatic time clock or 7 day programmable controls); note exceptions applied	NA		for Group R-1 guestrooms	Refer to Requirements List section Ventilation, Exhaust & Energy Recovery	
NA	C403.7.7.3	Transfer air	For spaces where conditioned supply air is utilized as transfer air to balance mechanical exhaust, indicate basis of transfer airflow (supply required to meet loads, health/safety requirement, air that would normally be exhausted); or exception applied		NA			adjacent perimeter zones, adjacent nonperimeter zones, and adjacent perimeter and nonperimeter zones  If applying Exception 2 to nonperimeter zones adjacent to perimeter zones, indicate that setpoints and deadband settings in these zones are coordinated so cooling in a nonperimeter	YES	C403.4.2.3	Automatic (optimum start and stop	Indicate all HVAC systems are provided with automatic start and stop controls; indicate start controls are configured to adjust the equipment start time as required to bring each area served up to design temperature just prior to scheduled occupancy; indicate stop controls are configured to reduce heating	NA	C403.4.9 C403.4.10			
NA			Indicate locations of outdoor air intake, exhaust and relief outlet dampers on plans; indicate whether dampers are Class 1 motorized, or gravity and exception applied (include leakage rating, cfm/sf)		YES			zone does not occur until the temperature in that zone is 5°F higher than the adjacent perimeter zone temperature in heating  If applying Exception 3 for DOAS, indicate	NO	C403.4.2.4	Exhaust system off-	For exhaust systems serving conditioned spaces in all occupancies other than Group R, indicate method of control and that controls are configured to turn exhaust systems on and off in concert with the ventilation air systems providing their make-up air, or exception	NO		DDC system applications, control	thermostats are configured for at minimum a 5°F deadband  Provide central and zone level DDC controls as required based on system application,	
NA			Indicate location of stairway and elevator hoistway shaft vent dampers on plans; verify dampers are Class 1 motorized; or exception		NO	C403.4.1.1 F	Jeat numn	supply air temperature heating setpoint is ≤ 65°F and cooling setpoint is ≥ 72°F, or method of supply air temperature reset  Indicate staged heating operation with			hour controls		NO		and display	capacity or size thresholds and other qualification per Table C403.4.11.1  Identify all DDC system input / output control	
NA	C403.7.8.2 C403.7.8.3		applied  Indicate locations of return air dampers that are integral to airside economizer operation; verify dampers are motorized; indicate		NO				NO	C403.4.2.5			NO	NO			Indicate control capability includes monitoring zone and system level demand for fan pressure, pump pressure, heating and
			whether dampers are Class 1, or within packaged equipment eligible for leakage rating exception (include leakage rating, cfm/sf)		NA NA	C403.4.1.2 I		Indicate zone thermostatic controls configured with 5°F minimum deadband for systems that control both heating and cooling  If separate heating and cooling thermostatic			destratification fan system off-hour controls	conditioned spaces in all occupancies other than Group R, indicate method of control and that controls are configured to turn fans on and off in concert with the associated HVAC systems, or exception applied				cooling; indicate capability to transfer demand information from zones to air / hydronic distribution system controllers, and to central plant systems and equipment controllers	
NA	C403.7.8.4	Damper actuation	Indicate automatic controls configured to close outdoor air intake, exhaust and relief outlet dampers during unoccupied equipment operation; not including economizer cooling,		NIA	r	estriction thermostats)	control devices are used to serve a zone, indicate locations of both thermostatic control devices and the zone they serve on plans	NO	C403.4.7	Combustion heating equipment	For combustion heating equipment other than boilers or radiant heaters with output capacity > 225,000 Btu/h, indicate modulating or staged combustion control.	NO NO			Indicate system has the capability for trending and graphically displaying input / output points	
			night flush or IMC required outdoor air / exhaust		NA			Indicate a limit switch, mechanical stop or DDC control with programming to prevent simultaneous heating and cooling	NO	0				C403.5.1	DX air handler variable cooling control(Located	For DX air handlers with cooling capacity ≥ 65,000 Btu/h, indicate number of cooling stages provided and method (multiple	
NA			Indicate method of activation of stairway and elevator hoistway shaft vent dampers (fire alarm or interruption of power)		NO	C403.4.1.4 F	Heated or cooled restibules	Indicate thermostatic controls within heating or cooled vestibules with a heating setpoint ≤ 60°F and cooling setpoint ≥ 85°F; indicate controls are configured to turn off heating			appliance,	bliance, and fire pit to $\leq 1$ hour without override, or that occupancy sensor controls are provided		under Integrated compressors and / or Economizer Control) compressors); indicat displacement (capaci	compressors and / or variable speed compressors); indicate minimum displacement (capacity reduction) as % of full load; indicate thermostats are configured with		
NA	C404.11.4	heated indoor pools	For buildings with pools or spas with water surface area > 200 sf, indicate exhaust air energy recovery method and use of waste heat					when outdoor temperature is > 45°F; or note exception applied								the same number of cooling stages and displacement	
NA		and permanent spas	(preheat ventilation air, pool water or service hot water); or exception applied  Indicate energy recovery system has the rated		NO	C403.4.1.4 F	Heated air curtains	Indicate controls are configured to turn off air curtain heating when outdoor temperature is > 45°F								Indicate control method (cooling capacity controlled in response to space temperature, space temperature controlled by modulating supply airflow, or both)	
			effectiveness and is configured to decrease the exhaust air temperature at design conditions by $\geq 36^{\circ}\mathrm{F}$			DUCTWO	ORK, SHAFTS AND	D PLENUMS									

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Public Works

Traffic

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Engineering

Fire

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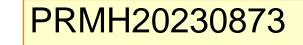
**WSEC** REQUIREMENTS

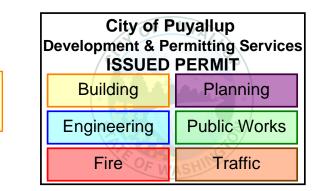
echanic	ıl Requi	rements Lis	t, pg 13 of 25	Mechan	nical Requ	irements Lis	t, pg 14 of 25		Mechan	ical Requ	irements Lis	t, pg 15 of 25	Mech	Mechanical Requirements List, pg 16 of 25  2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions.  For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com			
following inform shington State E	ation is necessa nergy Code, Cor	ary to check a mechanic mmercial Provisions.	ing Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved cal permit application for compliance with the mechanical systems and equipment requirements in the Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com	The following in Washington Sta	nformation is neces ate Energy Code, C	sary to check a mechanica Commercial Provisions.	ng Group R2, R3 & R4 over 3 stories & all R1 Admal permit application for compliance with the mechanic Technical Support at 360-539-5300 or via email at co	cal systems and equipment requirements in the	The following in Washington Sta	formation is neces ite Energy Code, C	sary to check a mechani ommercial Provisions.	ng Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights al permit application for compliance with the mechanical systems and equipment requirem Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com	nts in the The follow Washington				
	C403.10.1.1 C403.10.2	Duct construction	Indicate on plans that all ductwork is constructed and sealed per IMC	<b>ECONOMIZ</b> NA	<b>ZERS</b> C403.5	Air economizer	Identify all cooling systems requiring air		NA	C403.5.4.1	Water economizer capacity	For eligible systems where water-side economizer may be provided in lieu of air	NA	C403.4.3.2	Two-pipe changeove systems	Indicate changeover deadband is ≥ 15°F outdoor air temperature; indicate controls are configured so that heating / cooling modes are	
)			For outdoor air ductwork, also indicate on plans that ductwork meets air leakage requirements per C402.5 and vapor retarder requirements per the IBC	NA		required	economizer controls in equipment schedules on plans and in WSEC mechanical equipment compliance reports  Indicate all systems utilizing air economizer					economizer, indicate system is capable of 100% design cooling capacity at 50°F db / 45°F wb outdoor air temperatures; indicate if threshold for 100% design cooling capacity via economizer must be lowered to 45°F db /			active for at minimum 4 hours before changeover and that the delta between heating / cooling supply temperatures at changeover point is	active for at minimum 4 hours before changeover and that the delta between heating / cooling supply temperatures at changeover	
	C403.10.2.1 C403.10.2.2 C403.10.2.3	Duct pressure classifications	Identify location of low, medium and high pressure ductwork on plans	IVA			exceptions in WSEC mechanical equipment compliance report, including those with waterside economizer in lieu of air economizer;		NA	C403.5.4.2	Water economizer	40°F wb due to dehumidification requirements  Indicate that the pressure drop across	NA	C403.4.1.5	Heating water temperature setback	For boilers that provide building heating via one- or two-pipe systems, indicate controls that provide heating water temperature	
)		High pressure duct leakage test	Indicate high pressure duct leakage testing requirements on plans; provide test results to jurisdiction when completed				indicate on plans and in WSEC mechanical equipment compliance reports all eligible exception(s) taken and measures to comply with exception(s)				maximum pressure drop	precooling coils and heat exchangers in water economizer systems do not exceed 15 feet (4572 mm)	NA	C403.4.4	Hydronic system par load controls and	setback based on outdoor temperature  To heating and chilled water systems with ≥ 300,000 Btu/h output capacity, indicate	
	C403.10.1.1 C403.10.1.2	Duct insulation	For outdoor air ductwork located within conditioned space (upstream or downstream of shutoff damper), identify climate zone and indicate ductwork insulation R-value per	NA	C403.4.1 C403.5.1	Integrated economizer operation - air and water	Indicate air and water-side economizers are configured for partial cooling operation even where additional mechanical cooling is		NA	C403.5.5	DX equipment economizer fault detection and diagnostics	For DX air handlers with economizer and cooling capacity ≥ 54,000 Btu/h, provide a fault detection and diagnostics (FDD) system to monitor economizer system operation and			supply-water temperature reset	system controls are configured to automatically reset supply water temperature based upon demand; or exception applied	
			Table C403.10.1.1 on plans; or exception applied	NA			For DX air handlers with single or multiple		HYDRONIC	SYSTEMS - EO	UIPMENT SELECTIO	report faults  N & PERFORMANCE	NA			Indicate automatic pump flow controls are configured to reduce system flow rate by ≥ 50%, or the maximum allowed by the	
)		For supply and return air ductwork located within unconditioned space or outdoors, identify climate zone and indicate ductwork				stages of mechanical cooling; indicate controls are configured with air economizer as the first stage of cooling		NA			For chilled water plants and buildings with > 500 tons of cooling capacity, indicate air-cooled chiller capacity is ≤ 100 tons, or				equipment manufacturer, based upon the heating or cooling loads; or decribe why not required		
			insulation R-value per Table C403.10.1.2 on plans; or exception applied	NA			Refer to Requirements List section HVAC Controls for additional requirements for DX air handlers		NΔ	C403.6.7	Large capacity	exception applied  For buildings ≥ 300 tons of cooling capacity,	NA			For hydronic systems with output capacity ≥ 300,000 Btu/h that serve heating water	
ES			For supply air ductwork located within conditioned space, identify on plans if design supply air temperature is < 55°F or > 105°F; indicate ductwork insulation R-value per Table C403.10.1.2 on plans; or exception applied  For return and exhaust air ductwork located within conditioned space (upstream of the shutoff damper) and downstream of an energy recovery media, indicate ductwork insulation R-value per Table C403.10.1.2; or exception	NA	C403.5.2		Verify control method of HVAC systems with economizers does not increase building heating energy usage during normal operation		IVA	C+03.0.7	cooling systems	indicate method of multi-stage or variable capacity control (VSD, multiple staged compressors, or max capacity of any single unit				systems, chilled water systems and water- cooled unitary air conditioners, indicate that pumps are provided with a variable speed drive if one of the following conditions apply:  1) System pump motor hp is ≥ 2 hp and	
				NA	C403.5.3.1	Air economizer capacity	Indicate modulating outdoor air and return air dampers are configured to provide up to 100% outdoor air for cooling		NA	C403.3.2.2	Non-standard water- cooled centrifugal chillers	For water-cooled centrifugal chillers not designed for operation at standard conditions, provide calculations documenting maximum				pumps are designed to operate continuously or per time schedule; 2) System pump motor hp is $\geq 7.5$ hp and pumps are controlled by	
				NA	C403.5.1 C403.5.3.2	Air economizer controls and integrated operation		NΔ	NA	C403 3 3	Hot gas hypass	provide calculations documenting maximum full load and part load rated equipment performance requirements  For cooling equipment with hot gas bypass,				automatic DDC configured to only operate pumps when there is a call for zone heating or cooling	
)			applied  For exhaust and relief air ductwork located	NA			also required to meet the cooling load  Indicate that control of economizer dampers		A 14 A	0.103.3.3		provide either multiple step unloading or continuous capacity modulation; indicate bypass capacity per Table C403.3.3	NA			Where variable speed drives are required, indicate system is configured so that pump motor power is $\leq 30\%$ of design wattage at	
			within conditioned space and downstream of the shutoff damper, indicate ductwork insulation R-value per Table C403.10.1.2; or exception applied	NIA	0402.5.2.2	Air conscript high	is not based only on mixed air temperature; or exception applied for systems with cooling capacity \leq 65,000 Btu/h		NA	C403.4.3 C403.3.4		For hydronic systems with only a single boiler that has > 500,000 Btu/h input capacity, indicate multi-stage or modulating burner				50% of design flow rate; indicate pump flow is controlled to maintain one control valve nearly wide open, or to maintain a mimimum differential pressure; or exception applied	
	C403.10.1.1 C402.1.3	Shaft and plenum insulation	For outdoor air shafts and plenums, indicate on plans that the R-value of insulation on	NA			Indicate high limit shut-off control method and required high limit per Table C403.5.3.3  Refer to Requirements List section		NA			For boiler system (single or mulltiple) with > 1,000,000 Btu/h input capacity, indicate	NA	C403.4.6	variable pump flow	For individual pumps required to have variable speed controls, indicate manner of	
			these elements complies with Table C402.1.3 for steel-framed walls	NA		outdoor air	Ventilation, Exhaust & Energy Recovery  Indicate relief air outlets are sized and					turndown ratio per Table C403.3.4 and method (multiple single input boilers, modulating boilers, or combination)			control	pump speed control (differential pressure, static pressure setpoint, zone heating or cooling demand, or based on the relationship	
PING	C403.10.3 Piping insulation Indicate design temperature in		Indicate design temperature range of fluid	IVA			configured to relieve excess building air during air economizer operation to prevent		NA	C403.2.3	Variable flow	For pump motors ≥ 7.5 hp, indicate method of variable flow control (VSD or equivalent				between variable speed controller fequency and power)	
	C403.10.3 Piping insulation		conveyed in piping and thickness of insulation (in inches) on hydronic piping plans; or exception applied	NA			Indicate relief air outlet are located to avoid				capacity - pumps	method) in equipment schedule, or exception applied	NA	C403.4.5		Indicate controls are configured to automatically reduce overall plant flow and shut-off flow through individual chillers and	
A	C403.10.3.1	Protection of piping	Indicate method of protection of pipe				recirculation into the building		HYDRONIC	SYSTEMS - CO						boilers when not in use	
		insulation	insulation from damage / degredation on hydronic piping plans						NA	C403.4.3	Boiler sequencing	Indicate automatic controls that sequence operation of multiple boilers					

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Mechanical Requirements List, pg 17 of 25  2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions. For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com	Mechanical Requirements List, pg 18 of 25  2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions.  For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com	Mechanical Requirements List, pg 19 of 25  2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved  The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions.  For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com	Mechanical Requirements List, pg 20 of 25  2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 Administered by ©2022 NEEA, All rights reserved The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment requirements in the Washington State Energy Code, Commercial Provisions. For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com
NA  C403.4.3.3.1  Water loop heat pump - temperature deadband  Indicate method of water loop temperture controls are configured to provide ≥ 20°F water supply temperature deadband between heat rejection and heat addition modes, or controls are configured for system loop temperature optimization	NA  C403.9.2.2 Steam condensate systems heat recovery  Systems heat recovery  NA  For buildings with on-site steam heating systems, indicate condensate water heat recovery and use of recovered heat  For buildings that use off-site generated steam where condensate is not returned to the source, indicate on-site condensate water heat recovery	NA C403.6.1 Air systems serving multiple zones Identify supply air systems serving multiple zones and the zones they serve on plans; indicate whether system is VAV and method of primary air control; or provide supporting documentation for applied exception to VAV  NA C403.6.1 VAV air terminal primary supply all VAV air terminals and types (fan-powered all VAV air terminals and types (fan-powered)	NA C403.6.6 Parallel fan powered VAV air terminals  Indicate controls automatically activate or shut off the air terminal fan based on call for heating and / or ventilation; indicate controls are configured to activate the terminal fan as the first stage of heating prior to activating the heating coil; indicate control method of primary air during warmup or temperature setback mode
NA C403.4.3.3.2 Water loop heat pump - heat rejection equipment Indicate type of cooling tower (open- or closed-circuit) in equipment schedule; indicate whether the cooling tower is used directly in the heat pump loop or in conjunction with a separate heat exchanger; indicate method used to limit system heat loss when heat rejection is not needed	NA C403.9.2.3 Refrigeration condenser heat departments that have ≥ 500,000 Btu/h of recovery remote refrigeration capacity for coolers / freezers, indicate condenser heat recovery and use of captured energy (service water heating, space heating, or dehumidification reheating)	NA  For each air terminal include: maximum primary supply airflow rates during zone peak heating and zone peak cooling; maximum terminal airflow during reheating, recooling or mixing; minimum ventilation airflow rate, and	HIGH EFFICIENCY MULTIPLE-ZONE VAV SYSTEMS - EXCEPTION TO C403.3.5 DOAS, MUST COMPLY WITH ALL 15 PROVISIONS TO BE ELIGIBLE  NA  C403.6.10,Ite m 1 Minimum area served and zoning Indicate that each high efficiency multiple-zone VAV systems serves an area ≥ 3,000 sf and includes ≥ 5 zones
NA C403.4.3.3.3 Water loop heat pump - isolation valves For hydronic heat pump systems with total system power > 10 hp, indicate 2-way isolation valves on each heat pump and variable flow system control	NA  For buildings with ≥ 40,000 sf conditioned floor area and ≥ 1,000,000 Btu/h of remote refrigeration capacity, indicate condenser heat recovery to pre-heat service water; indicate remaining recovered heat is applied to space	the basis for these values; if IMC or ASHRAE 62.1 multiple zone equation is the basis for minimum flow rates, provide this calculation on plans	NA C403.6.10, Air economizer Indicate system is configured for 100% air economizer operation and complies with all related economizer requirements per C403.5 (without economizer exceptions)  NA C403.6.10, Direct digital controls Provide DDC controls for all components of
NA C403.9.1.3 Centrifugal fan open- circuit cooling towers For open-circuit centrifugal fan cooling towers with ≥ 1,100 gpm capacity, indicate cooling towers comply with efficiency requirements for axial fan open circuit cooling towers	NA C403.9.2.4 Heat recovery for space heating  For buildings that operate > 70 hour per week, that are not served by a DOAS with energy recovery, and have > 1,500,000 Btu/h of heat rejection capacity and ≥ 0.45 cfm per sf of design minimum supply airflow with reheat, indicate condenser heat recovery is provided	NA C403.6.2 Single duct VAV terminal units are configured to reduce primary supply air before reheating or recooling  NA C403.6.3 Dual duct systems - terminal units  For systems with separate warm air and cool air ducts, indicate terminal units are configured to reduce the flow from one duct to minimum before mixing with air from the	Item 3  (DDC)  system per C403.4.11 (regardless of system size); identify all DDC system input / output control points; indicate capability for trending and graphical display  NA  C403.6.10, Items 4 and 5  Supply and outdoor airflow measurement air > 2,500 cfm, provide an airflow
NA C403.9.1.1C Fan speed control For each fan powered by an individual motor or array of motors, with total connected fan power ≥ 5 hp (including motor service factor), indicate method of automatic fan speed control (adjusted based on leaving fluid temperature or condenser temperature /	for space heating that complies with Sections C403.9.2.4.1 or C403.9.2.4.2 or C403.9.2.4.4  NA  C403.9.2.4.1  C403.9.2.4.4  Indicate that 90% or more of the total building space heating and ventilation air design loads are served by heat energy rejected from either a heat recovery chiller or	NA C403.6.8C40 VAV system static - 3.6.9 VAV system static - pressure sensors and DDC set points Indicate locations of duct static pressure sensors on plans; include at least one sensor per major duct branch; verify controller setpoint pressure at each sensor is ≤ 1.2 inch w.g.	and control  monitoring station that is configured to measure outdoor air intake under all load conditions; indicate control sequence that increases or reduces outdoor air cfm based on VAV terminal feedback of ventilation efficiency (per C403.6.5 without exceptions) or and DCV (per C403.7.1)
pressure of heat rejection device); verify fan selection provides ≤ 30% design wattage at 50% design airflow  NA  For multiple-cell heat rejection equipment with VSD, indicate controls are configured to ramp all fans in unison (not staged on / off operation)	the cooling loop of water to water heat pump equipment  NA  C403.9.2.4.2 Exhaust heat recovery  Indicate that waste heat is recovered from least 90% of the total building exhaust airflow such that leaving exhaust air temperature while in heat recovery mode is 55 deg F dry bulb; note exhaust air systems eligible for exception to this requirement	NA  For systems with zone level DDC, indicate controls are configured to monitor zone damper positions and reset static pressure setpoint based on the zone requiring most pressure; include control logic that automatically detects and generates an alarm if any zone excessively drives reset logic, and allows building operators to exclude zones	NA  Provide a suppy airflow monitoring station that is configured to measure supply air delivered to VAV terminals under all load conditions  NA  C403.6.10,Ite m 6  Zone isolation and maximum area served by a single VAV system is ≤ 50,000 sf, or one entire floor, whichever is greater; in addition if a system
NA C403.9.1.4 Cooling tower flow turndown  For open-circuit cooling towers configured with multiple- or variable-speed condenser water pumps, indicate system is designed so all cells can be run in parallel; indicate method of condenser pump turn down control	NA C403.9.2.4.3 Process heat recovery In spaces with 5 watts per sf year-round cooling loads from lights and equipment, indicate these spaces are served by water-cooled equipment configured for heat recovery	NA C403.6.4 VAV system supply air reset Indicate controls automatically reset supply air temperature in response to building loads or outdoor air temperature; or exception applied	serves > 25,000 sf, that includes areas that are expected to be occupied non-simultaneously, indicate zone isolation controls per C403.2.1  NA  C403.6.10, Interior / exterior zone design supply air temperature  Verify that VAV terminals serving interior cooling driven loads are sized per a design supply air temperature that is 5°F higher than
NA  C403.9.2.1  Heat recovery for service water heating  For buildings with 24-hour operation and > 1,500,000 Btu/h of heat rejection capacity and design service hot water load > 250,000 Btu/h, indicate condenser heat recovery to preheat service water; or exception applied.  Provide calculations showing the amount of recovered heat that is utilized (60% of peak heat rejection load or pre-heat service water to 85°F).	NA  If these spaces are served by economizer (air or water), indicate automatic controls are configured to disable economizer operation while system is in heat recovery mode  MULTIPLE ZONE AIR SYSTEMS	NA C403.6.5 Multiple-zone VAV system ventilation optimization controls  For systems with zone level DDC controls, indicate controls are configured to automatically reduce outdoor airflow in response to changes in system ventilation efficiency; or exception applied	NA C403.6.10, Item 8 Identify all air terminals with minimum primary airflow setpoints > 50% of maximum setpoint in mechanical equipment schedule for these air terminals indicate inlet velocity does not exceed 900 fpm

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	ermitting Services	Thorson•Baker	+ Associates
UED	PERMIT	CONSULTING	ENGINEERS
	Planning	3030 West Streetsboro Road Richfield, Ohio 44286	(330) 659-6688 Ph. (330) 659-6675 Fax
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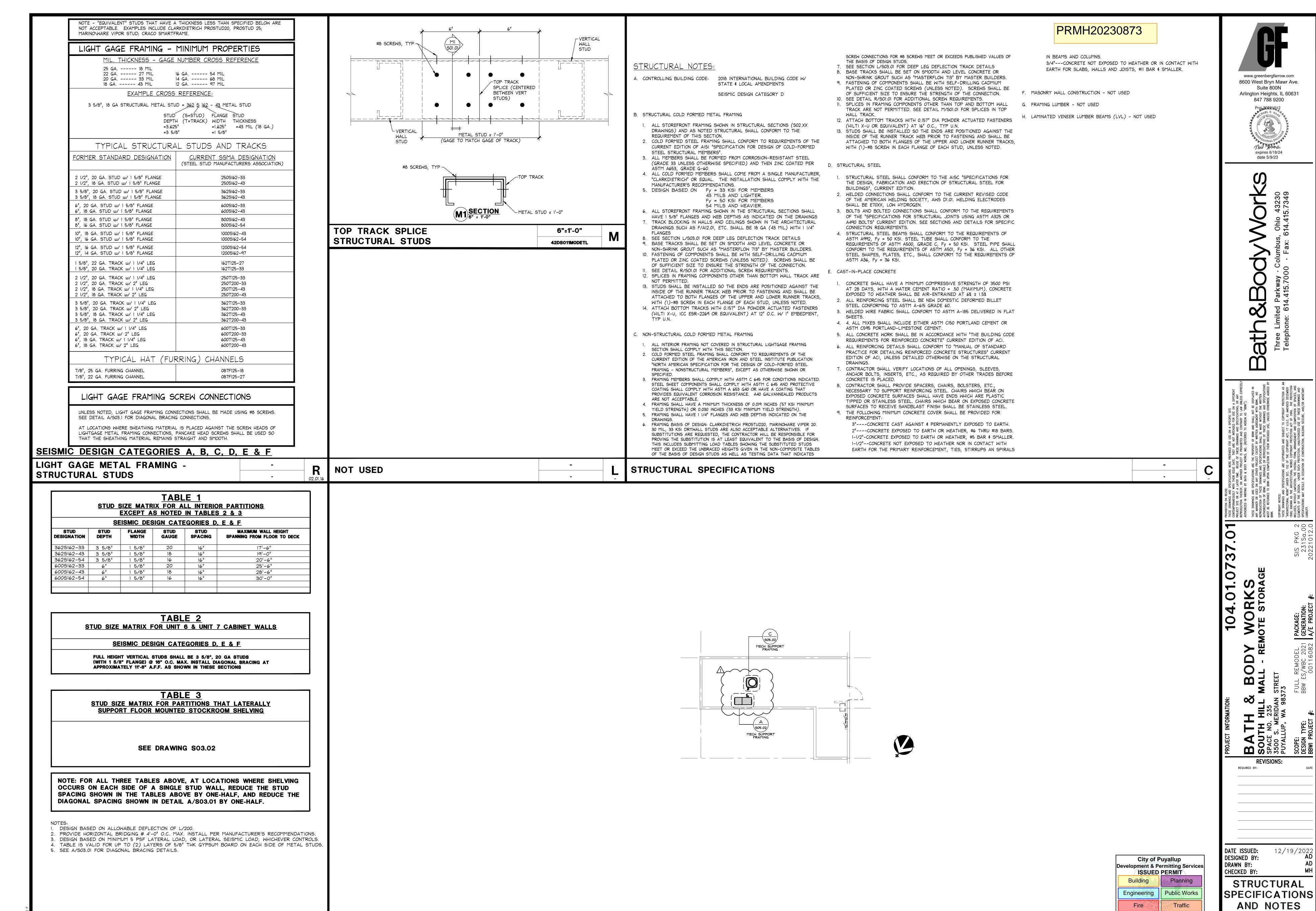
**WSEC** REQUIREMENTS

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						The following Washington S				The following Washington					
NA	C403.6.10,Ite m 8	Maximum allowable system brake horsepower	For each multiple-zone VAV system, provide calculations that verify total fan system bhp is ≤ 90% of the total allowable fan system bhp per Option 2 equation in Table C403.8.1.1		NA		If complying via high efficiency heating water plant: Indicate all VAV terminals have hydronic heating coils served by a heating water system with either gas-fired boiler(s)	NA	C403.12,It	Controls for high occupant density spaces	(≥ 25 people / 1000 sf), indicate DCV control that resets ventilation setpoint based on measured CO2; also indicate occupancy	NA			Indicate occupancy sensing or timer switch controls configured to automatically shut off heating system when area served is unoccupied
NA	C403.6.10,Ito m 9	Fan-powered termina unit motor and control	Indicate all series and parallel fan-powered terminals have electronically commutated motors (ECM); indicate DDC control system is configured to vary air terminal fan speed as				with thermal efficiency (Et) ≥ 92%, air-to- water heat pumps, or heat recovery chillers; indicate hydronic heating coils are sized per a maximum 120°F entering water temperature during peak demand				sensor control that automatically reduces minimum ventilation to zero and sets back room heating and cooling setpoints by $\geq 5^{\circ}F$ when space in unoccupied	NA	C403.11.2	Snow melt systems	Indicate automatic controls configured to shut off system when pavement temperature exceeds 50°F and no precipitation is falling, and when outdoor air temperature exceeds
			a function of the load; indicate fan speed during periods of low heating, low cooling, or ventilation-only mode is ≤ 66% of peak design air flow, or provide supporting documentation for applied exception		NA		If complying via high efficiency chilled water plant: Indicate all VAV air handlers have cooling coils served by chillers with rated IPLV efficiency that exceeds WSEC listed	NA	C403.12, Item 7	High efficiency system option	Indicate which system performance option is applied - high efficiency DX cooling and heat pump or high efficiency gas heating; or heating coils served by a high efficiency heating water plant; or cooling coils served by	NA	C403.11.3	Freeze protection system controls	40°F  Indicate automatic controls to shut off system when outdoor temperature exceeds 40°F, or conditions protect fluid from freezing
NA C403.6.1		Application of single	ngle Indicate VAV terminal types on plans; verify				IPLV by at least 25% per Table C403.3.2(7)				high efficiency chilled water plant	HVAC EQ	UIPMENT ENERG	GY USE METERING	
NA	Item 10	duct and fan-powered terminal units	fan-powered terminal units only serve perimeter zones with envelope loads and interior zones with high occupant density and DCV per C403.7.1; verify all other zones are served by single duct terminal units		NA	C403.6.10, Fault detection and	(note water-cooled IPLV is max, all others are min); indicate smallest chiller or compressor in plant is ≤ 20% of the total plant capacity, or provide thermal storage sized for ≥ 20% of total plant capacity  Indicate DDC system includes automatic fault	NA			If complying via high efficiency DX: Indicate full load and part load rated cooling efficiency exceeds WSEC listed efficiency by at least 15%; if heating is supplied by a gas-fired furnace, indicate thermal efficiency (Et) is ≥ 90%; if system is a heat pump, indicate	NA		HVAC equipment	For new buildings > 50,000 sf and building additions > 25,000 sf, verfiy energy use metering of all equipment used to provide space heating and cooling, dehumidification and ventilation will be provided per C409;
NA	C403.6.10, Item 11		Indicate DDC controls are configured to automatically reset the primary supply air cfm setpoint of all fan-powered terminal units to the minimum required to maintain ventilation during occupied heating or deadband mode, based upon the VAV air handling unit minimum ventilation air fraction  For zones > 150 sf with high occupant density		MICH FIRM	Item 15 diagnostics	detection and diagnostics (FDD) configured to monitor operation and provide fault reporting of all required parameters for all				heating efficiency (HSPF or COP) exceeds WSEC listed efficiency by at least 10%; control of cooling and heating coil output shall be configured with a minimum of 2-stages or modulating	DOCUME	DOCUMENTATION AND SYSTEM SPECIFIC REQUIREMENT TO SUPPORT COMMISSIONING (CX)		indicate equipment eligible for exception  EQUIREMENT TO SUPPORT COMMISSIONING (CX)
							VAV air handlers and VAV air terminal units in the HPVAV system  4S - EXCEPTION TO C403.3.5 DOAS, MUST COMPLY WITH ALL 8 PROVISIONS TO					NA	C408.1	systems	For buildings with $\geq 240,000$ Btu/h total output cooling capacity or $\geq 300,000$ Btu/h total output heating capacity, indicate that all
NI A	C402 6 10 Its	Controls for high			BE ELIGIBI		45 - EACEPTION TO C405.5.5 DOAS, MUST COMPLY WITH ALL & PROVISIONS TO	NA			If complying via high efficiency heating water plant: Indicate hydronic heating coils are				mechanical systems regardless of individual capacity are required to be commissioned; or
IVA	m 12		(≥ 25 people / 1000 sf), indicate zone is served by a dedicated terminal unit with DCV control that resets terminal unit ventilation setpoint based on measured CO2; also		NA	C403.12, Air economizer Item 1	Indicate system is configured for 100% air economizer operation and complies with all related economizer requirements per C403.5 (without economizer exceptions)				served by a heating water system with either gas-fired boiler(s) with thermal efficiency (Et) ≥ 92%, air-to-water heat pumps, or heat recovery chillers; indicate hydronic heating coils are sized per a maximum 120°F entering	NA			provide building heating / cooling capacity calculation demonstrating eligibilty for exception  Indicate that all systems, equipment and
			indicate occupancy sensor control that automatically reduces minimum ventilation to zero and sets back room heating and cooling setpoints by ≥ 5°F when space in unoccupied	NA C403.12, Direct digital cont (DDC)	Provide DDC controls for all components of system per C403.4.11 (regardless of system size); identify all DDC system input / output control points; indicate capability for trending	NA			water temperature during peak demand  If complying via high efficiency chilled water plant: Indicate cooling coils are served by chillers with rated IPLV efficiency that				controls for which the WSEC requires control functions and / or configuration to perform specific functions are included in the Cx scope		
NA	Item 13 systems serving data centers and server, electronic equipment	systems serving data centers and server,	For data centers and server, electronic equipment, telecom or similar spaces with design cooling loads > 5 W/sf, indicate spaces are served by dedicated cooling systems that are independent of the HPVAV systems serving the rest of building	equipment, telecom or similar spaces with design cooling loads > 5 W/sf, indicate spaces	NA C403.12,Item 3 Outdoor airflow measurement and control monitoring station that is configured to measure outdoor air intake under all load conditions; indicate controls that adjust		and graphical display  For systems with minimum required outdoor				exceeds WSEC listed IPLV by at least 25% per Table C403.3.2(7) (note water-cooled IPLV is max, all others are min); indicate	NA		Commissioning requirements in construction	Indicate in plans and specifications that Cx per C408 is required for all applicable mechanical systems
						monitoring station that is configured to measure outdoor air intake under all load				smallest chiller or compressor in plant is $\leq$ 20% of the total plant capacity, or provide thermal storage sized for $\geq$ 20% of total plant	NA	NA		Include general summary that includes at minimum: narrative description of activites, responsibilities of the Cx team, schedule of	
NA	NA	Indicate dedicated cooling systems are configured for 100% air economizer operation and comply with all related economizer requirements per C403.5 (without economizer exceptions), or heat recovery per C403.5, Exception 9		NIA	A C402 12 Itam Maximum allowable	outdoor air cfm via DCV per C403.7.1  For each single-zone VAV system, provide calculations that verify total fan system bhp is ≤ 90% of the total allowable fan system bhp per Option 2 equation in Table C403.8.1.1	NA	C403.12,	Fault detection and	capacity  d Indicate DDC system includes automatic fault				activities including verification of project close out documentation per C103.6, and	
				4	4 system brake horsepower		Item 8	diagnostics	detection and diagnostics (FDD) configured to monitor operation and provide fault reporting of all required parameters for all HPVAV single-zone air systems	NA			Include in general summary that a Cx project report or Compliance Checklist (Figure		
NA		Central plant	Indicate whether systems are served by a high efficiency heating water plant, or a high		NA	NA C403.12, Supply airflow control	Provide controls that adjust supply airflow based on the heating and cooling loads;	EXTERIOR HEATING SYSTEMS					C408.1.4.1) shall be completed by the Certified Cx Professional and provided to the		
Item 14		efficiency	efficiency chilled water plant				indicate control sequence that limits minimum fan speed to 30% of peak design airflow or required ventilation during unoccupied mode, whichever is less	NA	C403.11.1	Heating outside a building	Heating outside a Indicate systems providing heating in non- puilding enclosed outdoor occupied spaces are radiant systems				owner prior to the final mechanical inspection.

Mecha	anical Requ	irements Lis	t, pg 25 of 25	
2018 WSEC	Requirements for Con	nmercial Buildings includi	ing Group R2, R3 & R4 over 3 stories & all R1 -	- Administered by ©2022 NEEA, All rights reserved
	•	•	al permit application for compliance with the me	chanical systems and equipment requirements in the
	State Energy Code, Co			
For auestion	is about this report, cor	ntact WSEC Commercial	Technical Support at 360-539-5300 or via emai	l at com.techsupport@waenergycodes.com
For question	is about this report, cor	ntact WSEC Commercial	Technical Support at 360-539-5300 or via emai	l at com.techsupport@waenergycodes.com

NA	C408.1.2.2	Functional performance testing criteria	Identify in plans and specifications the intended operation of all equipment and controls during all modes of operation, including interfacing between new and existing-to-remain systems	
NA	C408.2.2	Air system and hydronic system balancing	Indicate in plans that air and fluid flow rates shall be tested and balanced within the tolerances defined in the specifications; indicate systems shall be balanced in a manner to first minimize throttling losses, then adjusted to meet design flow conditions	
NA	C408.2.2.1	Air system balancing devices	Indicate devices that provide the capability to balance all supply air outlets, zone terminals and air handling equipment requiring system balancing	
NA	C408.2.2.2	Hydronic system balancing devices	Indicate devices that provide the capability to isolate, balance and measure flow across all hydronic equipment requiring system balancing including heating and cooling coils and pumps; or exception applied	
PROJECT	CLOSE OUT DOC	UMENTATION		
YES	C103.6	Documentation and project close out submittal requirements	Indicate in plans that project close out documentation and training of building operations personnel is required for all mechanical components, equipment and systems governed by this code; indicate close out documentation shall include: record documents, O&M manuals, applicable WSEC mechanical equipment compliance reports and	

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SEISMIC DESIGN CATEGORIES D, E & F

N LOCATION PLAN

42DA121NOMATX

STUD SIZE MATRIX - STRUCTURAL

STUDS

DRAWING NUMBER:

1/8" = 1'-0"

